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ADDRESSES AND ORIGINAL ARTICLES

ASSESSMENT OF DENTAL SEPSIS AS A FACTOR AFFECTING MEDICAL AND SURGICAL PROCEDURES*

BY ARTHUR BULLEID, M.R.C.S. Eng., L.D.S.
ASSISTANT DENTAL SURGEON TO GUY'S HOSPITAL

IN defining dental sepsis most dental surgeons agree that the terms "open" and "closed" largely meet the needs of the case. There is no clear-cut difference between the possible effects of the two groups, yet the terms do suggest two clinical pictures. If we accept "open" sepsis as applying to such diseases as caries, gingivitis, and pyorrhœa, we at once visualise conditions in which drainage into the mouth is possible. If we confine the term "closed" sepsis to those dental lesions in which there is no possibility of drainage into the mouth then we shall be able to confine it to pulpless teeth with or without radiographic evidence of apical osteitis; to the so-called "live" teeth with heavy artificial restorations; and to residual infection left in the alveolus after the removal of teeth in late pyorrhœa. I think that it is now becoming more and more generally recognised that dental sepsis, whether of the open or closed type, is but a superadded streptococcal infection and not a sole cause of general disease. This does not lessen its importance but it makes its assessment more difficult. Eradication of the sepsis does not necessarily mean the extraction of teeth, and this is why I think the terms "open" and "closed" are useful from a clinical point of view. No one will deny that caries, gingivitis, and early pyorrhœa can be treated adequately by conservative means, and I shall attempt to show that by adequate clinical and bacteriological methods it is possible, in a large proportion of cases, to assess the importance of the sepsis present.

BACTERIOLOGY

Open and closed sepsis are similar in that streptococci are the organisms universally found in both types. It must be admitted that the obvious fallacies in the bacteriological findings in open sepsis are almost insurmountable, but in spite of this it seems highly probable that the general manifestations associated with dental sepsis are streptococcal. It can be stated definitely that no other group of organisms that can be cultivated from dental lesions, with the exception of staphylococci, give rise to specific antibodies in the blood-serum of the patients concerned.

It seems to me that much can be learned from an investigation of the bacteriological flora and of the cytology of the exudate from pyorrhœa pockets. In cases of pyorrhœa in which the disease is progressing and in which there is the possibility of toxic absorption, the type of leucocyte is highly important. Polymorphonuclear leucocytes denote active pus-formation. After adequate conservative treatment active pus-formation should have ceased and what leucocytes are present in the smears are chiefly mononuclears. After pockets have been eradicated, either by conservative or surgical means, and the gums have been kept healthy by simple hygiene, direct smears from the gingival trough show hardly any leucocytes, the few present being almost all mononuclears.

The symbiosis of fusiform bacilli and spiral forms, which has been described by many observers, must receive special note. All that can be said at present is that the appearance of the fusospirochætal flora merely denotes a gum inflammation; there is no evidence that the oral spirochætes by themselves can produce disease in man, and they confer no humoral immunity. Two other organisms also deserve mention—*Amœba buccalis* and *Leptothrix buccalis*. The former is a protozoan which is actively phagocytic but bears no causal relationship to pyorrhœa. Its presence denotes stagnation and therefore serves an important function in showing that the treatment of the condition is inadequate. The leptothrix is the causal organism in seruminal tartar formation, and its presence shows a particular patient's liability to that condition, a factor of some import in pyorrhœa. In a study of the organism begun in 1921, I was able to grow it on artificial culture medium and produce tartar experimentally in cats' mouths that had previously been tartar-free. I was also able to demonstrate that the organism attracted calcium. Smears made from the exudate expressed from just below the gum margins in patients in whom there is much tartar reveal a large amount of leptothrix mycelium, while in those patients in whom the liability to tartar formation is slight the organism is found in relatively small numbers.

The effect produced on the cytology and flora in cases of open sepsis by both conservative and surgical treatment is very similar. With adequate and effective conservative treatment the ratio of polymorphonuclear to mononuclear leucocytes swings to the side of the latter; the fuso-spirochætal flora will mostly be absent and that no amœbæ and only very little leptothrix mycelium will be detected. If this result is not brought about by simple conservative methods then surgical removal of the pockets by gingivectomy is called for, the value of the procedure being checked by the examination of smears from the gingival trough, coupled with the clinical appearance. In those cases in which the desired effect cannot be obtained by these two methods the only logical procedure is to extract the teeth in order to do away with stagnation and to prevent toxic absorption.

We can discuss the bacteriology of closed dental sepsis with a greater degree of certainty, because one of the manifestations of this pathological condition is the presence in the peri-apical space of an encapsulated mass of granulation tissue, firmly adherent to the peri-odontal membrane and remaining attached to the tooth on extraction. By appropriate means it is possible to sterilise the exterior of this granuloma and make cultures from its interior. In 1928 I commenced an investigation on the bacteriology of pulpless teeth and since that time I have examined the bacteriology of more than a thousand teeth.

In all the 400 pulpless teeth with apical granulomata that had been extracted the interiors of the granulomata yielded a growth of streptococci, usually of the *viridans* or indifferent groups, sometimes in pure culture, at other times associated with other organisms.

I have also investigated 600 extracted pulpless teeth, some showing apical osteitis in skiagrams but others with no such evidence. After most careful preliminary sterilisation of the supporting structures, apical cultures were made, using both aerobic and anaerobic methods. None of the teeth in this series had attached granulomata. In all a

* A Hunterian lecture delivered before the Royal College of Surgeons of England on Jan. 22nd, 1936.

streptococcus was isolated, usually of the *viridans* or indifferent types. In a large percentage of the single-rooted upper teeth in this series the streptococcus was in pure culture, but in the multiple-rooted teeth it was accompanied by other organisms; the only organism consistently found, however, was a streptococcus.

In 20 cases in this series the method of open operation—i.e., cutting down on the apex of the tooth "in situ" by removing the overlying structures—was adopted and in all cases the apical cultures revealed a streptococcus. This suggests, though it does not prove absolutely, that the streptococci isolated from the apices of the extracted pulpless teeth were in fact responsible for the pathological condition. The absence of an area of apical osteitis in the skiagram does not indicate the absence of infection nor does the size of the area denote the potentialities of the infection. On the contrary, pulpless teeth showing no areas of apical osteitis in skiagrams may be passed as harmless, when in fact they are definitely infected.

I have examined bacteriologically 20 teeth with associated acute alveolar abscesses—16 were approached through an external incision and the remaining 4 by evacuating the pus in an exploratory syringe. In all a streptococcus was recovered; it was noted that the percentage of true β-hæmolytic streptococci was higher in this series than in the chronic apical infections.

The epithelial linings of 20 cystic new growths have also been examined bacteriologically, 16 being dental cysts and 4 dentigerous; all were approached by the open method, using strict surgical asepsis. All yielded growths of streptococci in aerobic or anaerobic culture, or both. The fluid of the cysts, if clear, was sterile, but if opalescent or purulent, gave a growth of streptococci.

Another type of dental sepsis that is, I think, often missed is connected with the absorption and rounding off of the apices of "live" teeth. This destruction is shown in the skiagram, and bacteriological examination of the apices of these teeth either by open operation or by extraction reveals once again the presence of the ubiquitous streptococcus. I have been able to investigate only 6 of these cases, but in 4 the streptococcus was of the true hæmolytic type. The following illustrates the importance of this type of infection.

A patient developed phlebitis in his right leg, which in time cleared up. The only history he gave was that he had previously grazed his heel on a nail in his boot, and this soon healed. Later the phlebitis recurred and yet no obvious focus of infection was found. His teeth were radiographed and it was discovered that one of the lower premolars seemed a good deal shorter than its fellows. There was no pain and tests for vitality were positive. As the phlebitis cleared up there was no dental treatment. Later a recurrence of the trouble led to further skiagrams and another lower premolar tooth had become shortened. Both these teeth were extracted and apical cultures gave a growth of a hæmolytic streptococcus. Further absorption of "live" teeth took place and the end-result was the extraction of all his remaining teeth, and subsequent vaccination with the hæmolytic streptococcus. Not until this was done did the phlebitis finally disappear.

The case is interesting I think in that it suggests that the infecting streptococcus, which must have gained entrance via the grazed heel, had been carried to the teeth where it manifested itself by eroding the apices. As the primary focus had long since healed the dental focus became all important.

Another type of closed dental infection which I have investigated is that known as residual osteitis. This is shown in skiagrams as a feathery appearance of the alveolus and may occur in late pyorrhœa when extraction of teeth has been too long delayed. If this feathery alveolus is removed and cultivated the cultures invariably reveal the presence of a streptococcus, usually of the *viridans* or indifferent groups. The following case typifies the importance of this class of infection.

A patient had an early infective arthritis of both knees, which disappeared with the enucleation of tonsils and a few badly infected teeth. Three years later the arthritis of the knees recurred; no focus of infection was discovered until the edentulous lower jaw was radiographed. An area of residual osteitis was revealed extending from the premolar region on one side to the premolar region on the other. This was removed and cultivated, and a streptococcus of the *viridans* group recovered. Subsequent vaccination with this streptococcal antigen brought about a gradual cure.

The last type of closed dental sepsis that I have investigated in collaboration with Ellingham is that found in connexion with "live" teeth in which heavy artificial restorations have been inserted. In a series of 30 cases, 22 were found to contain living bacteria. In 90 per cent. of the latter the organism cultivated from the pulps was a streptococcus occasionally associated with a staphylococcus. In this research all we have been able to demonstrate so far is the presence of the micro-organisms in the "live" pulps and I cannot state dogmatically what their significance is. It seems essential to study the histological appearances of these "live" pulps in conjunction with the bacteriological findings before the results can be correctly interpreted.

It is wise, I think, to group the streptococci found in these areas of closed sepsis because it is well known how deleterious are the effects of the true hæmolytic group, whereas the effects of the *viridans* or indifferent groups are much more problematical. In a series I investigated, only 10 per cent. of the cases had streptococci of the true hæmolytic group; the other 90 per cent. were divided between the *viridans* and indifferent groups, chiefly the former. In dental lesions the true hæmolytic streptococci are found in a higher proportion in acute conditions such as acute alveolar abscess and acute Vincent's infection, in which systemic involvement is always present, though possibly it may not be dangerous.

I attach importance to the possible symbiotic relationship of the yellow staphylococcus and the *viridans* streptococcus. Staphylococci, particularly the *aureus*, are infrequent in dental lesions and their presence is very important, particularly if the patient is also subject to staphylococcal infections such as boils or carbuncles. The following is an example:—

A schoolboy had "toothache" in a lower premolar which had been rather heavily restored and the tooth was extracted under nitrous oxide anæsthesia. Nothing untoward happened for three days and then swelling appeared which spread along the jaw from the symphysis to the articulation on the same side. An incision was made over this swelling by the doctor but no pus was evacuated. The remaining teeth on the same side of the lower jaw were loosened, the periosteum being stripped up. The mouth was intensely dry and hot, and the boy had a high, swinging pyrexia. My colleague, Kelsey Fry, saw the patient with me and inserted a drainage-tube from the site of the original incision right down to the jaw, but found no pus. I cultured the blood and obtained a pure growth of *Staphylococcus aureus*; from the apices of the teeth, which had become so loosened that I was able to pick them out with dressing forceps, I obtained a heavy growth of the yellow staphylococcus, as well as the usual *Streptococcus viridans*. The boy died.

On several occasions I have noted the general disturbance occasioned by the removal of teeth, that on culture have grown streptococci plus yellow staphylococci. It suggests a focus which might give rise to a staphylococcal bacteræmia and so supply the organisms which could cause an osteomyelitis of the long bones, particularly in children. The following case is of interest in this connexion:—

A boy of 14 received a blow on his right shin during a game of hockey. The leg was painful for a few days and showed some bruising, but there was no fracture. The bruising and swelling soon disappeared and no further notice was taken of the injury. Some six weeks later the boy developed an acute alveolar abscess in connexion with an upper premolar tooth, which was extracted. Cultures from the evacuated pus gave a heavy growth of *Staphylococcus aureus* associated with *Streptococcus viridans*. Recovery from the extraction was uneventful, but about a week later the right leg became painful at the site of the original blow. A surgeon was called in and diagnosed osteomyelitis, which was confirmed by operation. It was suggested that the staphylococcus gained access to the blood at the time of the extraction of the tooth and that the previous injury to the leg localised the organism.

CHANGES IN THE BLOOD

Recently Elliott, instigated by Okell, has carried out an investigation in which I have had a practical interest. Elliott has proved that the multiple extraction of teeth in mouths showing severe dental sepsis of both open and closed types resulted in a large percentage of cases in a temporary *Streptococcus viridans* bacteræmia. Positive blood cultures of this group of streptococci were recorded in 75 per cent. of the cases investigated, the bacteræmia lasting about a quarter of an hour following the extraction of the teeth. In 10 per cent. of the cases, patients with severe dental sepsis were found to have a positive *S. viridans* bacteræmia irrespective of any operative interference. It seems logical to suggest that this "leak," which in normal patients in good health is of little import, might determine the infection of more remote structures if they were in a condition of lowered resistance.

Whether the streptococcus isolated from the blood is identical with that found at the apices of the extracted teeth or from the pyorrhœa pockets is difficult to prove, but at least they are both of the *viridans* group. I am at present engaged in an investigation to show whether this leak of streptococci into the blood is greater numerically and in a larger proportion of patients with clean mouths but who have pulpless teeth, than it is in those in whom the sepsis is chiefly of the open type. It may be merely the extent and degree of the trauma rather than the type of sepsis which is responsible for the bacteræmia, though it must not be forgotten that there was a bacteræmia in 10 per cent. of those in whom there was no operative interference.

The blood picture of patients with open dental sepsis is not abnormal enough to be very informative. In 70 patients suffering with pyorrhœa, in whom no systemic disease was observed, the blood counts showed very little difference from normal. Occasionally a slight decrease was noted in the hæmoglobin percentage, or in the number of red and white corpuscles, but otherwise there was no difference from normal. In 4 patients in whom the pyorrhœic state was very advanced there was a slight leucocytosis. In 10 cases of acute alveolar abscess there was a definite leucocytosis of 12,000–15,000 per c.mm., and differential counts showed an absolute increase in the polymorphonuclear neutrophils and a corresponding decrease in the lymphocytes; the hæmoglobin percentage and the red cell count were only slightly decreased from normal. In 5 cases of acute Vincent's infection of the gums there was a slight but definite leucocytosis. In 30 patients with four or more pulpless teeth of long standing, the blood picture was slightly abnormal, irrespective of whether the radiograms of the teeth revealed apical osteitis or not. The chief points noted were a leucopenia, a decreased hæmoglobin percentage, and a lessened number of red cells; in the differential leucocyte counts there was a slight swing to the lymphocytic side. It seems, however, true to say that dental sepsis by itself, whether open or closed, does not produce changes in the blood picture that are of great significance when one realises the normal daily variations. All I can say from my own observations is that the changes in the blood which I have noted have been rather more marked in closed than in open sepsis.

RELATION TO SYSTEMIC DISEASE

Now for a consideration of those patients in whom the dental sepsis and some systemic condition are found together. It must not be thought that because both may be found in the same patient that the dental sepsis is necessarily the cause of the general disease.

Knott and others have confirmed the germicidal effect of the hydrochloric acid of the gastric juice and have shown that the germicidal effect of organic acids is almost negligible in the absence of free hydrochloric acid. When chronic gastritis is present, owing to prolonged mechanical irritation of the gastric mucous membrane by bolting food, and by alcohol, tobacco, &c., the normal secretion of hydrochloric acid suffers. If the exciting cause of the gastritis continues even when complete achlorhydria has developed, the gastritis becomes progressively worse; it is in these cases that the streptococcal flora that is swallowed becomes important. There seems no reason to doubt that the swallowed pus itself may act as an irritant.

We are rather prone to think of open dental sepsis purely in relation to the bacterial flora found and to forget the chemical side of the picture. We swallow more than bacteria, and it seems feasible to suggest that the swallowing of pus and of the decomposition products of protein and carbohydrate metabolism may irritate the gastric mucous membrane. Removal of the decomposing food material and the pus found in pyorrhœa pockets is of undoubted importance.

In some preliminary work on the chemistry of the products of decomposition of food material found in mouths with open dental sepsis, some interesting results have been obtained, and it seems as if further investigation is indicated. If the material found around the teeth and gums in pyorrhœic mouths is washed out with sterile water and analysed it has been possible to detect the decomposition products of both carbohydrates and proteins. The decomposition products of the former are the higher alcohols, and of the latter putrefactive alkaloids, which possess basic properties and are nitrogen derivatives; some are toxic, some harmless. At present I cannot say definitely if the higher alcohols are present in these pyorrhœic mouths, though the furfurol test was always positive, because mucin possesses a carbohydrate group and will give this reaction. Members of the amine group have been isolated as dry salts and primary, secondary, and tertiary

amines have all been demonstrated. The toxic nature of these amines has been tested on the heart of the pithed frog. The primary and tertiary amines were non-toxic but the secondary were definitely toxic, and the heart did not recover after introducing atropine sulphate, which suggests that these amines are not of the muscarine group.

Another interesting experiment was to grow the organisms found in the washings from the pyorrhœic mouths on culture medium well enriched with sugars. The amines derived from the inoculated culture medium were all non-toxic to the frog's heart, and so were the amines derived from the uninoculated culture medium.

In any assessment of the importance of open sepsis the feasibility must be considered of preventing these decomposing food products from being swallowed by removing them from around the teeth. If this can be done by conservative methods, well and good, but if not, extraction of teeth is a logical procedure.

Now it is recognised by all that if a gastric or duodenal ulcer of long standing fails to react to medical treatment the aid of the surgeon is essential, and it is in these cases that I would assess the importance of dental sepsis, whether open or closed, much higher than previously. When the surgeon operates it is important that the interference shall be successful, and that any condition which might prejudice the success of the operation must be eradicated. It is notorious that streptococci, even those of low virulence, attack wounds, and as we know that the streptococci from pulpless teeth can reach the site of operation via the blood stream, pulpless teeth should not be tolerated. Even the streptococci from open dental sepsis, which when swallowed normally fail to pass the acid barrier, may yet survive in the stomach in the first 48 hours after operation and lodge at the operation site. This would be a definite risk when the acid barrier is replaced by one of hypo- or achlorhydria following the gastrojejunostomy or partial gastrectomy. Thus if there is any dental sepsis in a patient before a contemplated operation its treatment must be more radical than when surgical measures are thought unnecessary. In these cases I would advise against the retention of any teeth that are the site of a streptococcal infection and would strongly suggest that the necessary dental treatment is carried out as early as is conveniently possible before the major operation. It must be realised that the general surgeon has every reason to object to the presence of pus and "dirt," even if it is sterile.

Statistics prove that the breaking down of operation wounds or the recurrence of malignant disease is greater in mouths in which sepsis is present than it is in those in whom it has been eradicated. One fact which most observers have noticed is that, if any teeth are spared in a mouth in which a major surgical operation has been performed, they subsequently show clear evidence of infection, even if at the time of operation they appeared healthy. This suggests that it is wise to render a mouth edentulous before an extensive operation. In fact, if a major operation is contemplated in any region of the body I think it is wise to remove at least all pulpless teeth, because of the potential risk of streptococci passing via the blood stream to the site of operation, a risk which I think is definitely greater in closed than in open sepsis. If one always followed sound surgical opinion all possible foci of infection should be removed, and with this we must necessarily agree, even though the infection is only an "overload." If the removal of teeth did not result in any mutilation of the patient there would be no sound reason for keeping teeth once they had become the seat of disease. As, however, they do serve a most useful as well as æsthetic purpose, then we must modify our treatment accordingly. This is, I think, a justification for the dental surgeon who at first attempts to remove open dental sepsis by conservative methods and who admits the necessity for the extraction of teeth only when this fails. As the sepsis in pulpless teeth cannot be eradicated by any known conservative method there seems to be no sound justification for retaining them. The only exception I would make is in the single-rooted upper tooth on which apicectomy can be performed with some hope of success.

Now is there any possibility of correlating the dental and systemic conditions, when such are present, by any known and accepted bacteriological methods? Personally I am inclined to think that in the present state of our knowledge there is as yet no certain means of doing so. The work of Okell and Elliott, to which I have already referred, offers a very useful method which should be more fully explored. In a series of 500 cases I carried out complement-fixation tests on the patient's serum and the dental streptococcal antigen, but they were all universally negative. Agglutination seems to be a little more hopeful, but it is impossible to state dogmatically what reliance can be placed on the results. Over a period of some six years I have made a practice of testing the dental streptococcus isolated from the apices of extracted teeth against the patient's serum. In some I have obtained positive agglutination in a sufficiently high dilution of the patient's serum to suggest a specific connexion between the dental and systemic conditions. The results, of course, depend on obtaining the correct strain of streptococcus from the dental lesions and this is by no means always certain. Recently I have been using the streptococcal strain isolated from the blood after the extraction of teeth and, with this as antigen, the agglutination results have been more encouraging, but that is all I can truthfully say.

ASEPSIS IN ORAL SURGERY

Opening up cavities in bone is always fraught with some risk; this is minimised if surgical asepsis is observed as far as is possible. There is always the risk of the spread of streptococci, and sometimes the yellow staphylococci, by the blood stream when surgical procedures in the mouth are being carried out, particularly if they are accompanied by trauma and laceration of tissues, which unfortunately is rather common in the oral cavity. This should make the dental surgeon pause before he carries out multiple extractions of teeth or causes unnecessary trauma by extensive surgical procedures when simpler methods would suffice. It is unusual to find dangerous reactions following dental operations in the mouth only because the dental streptococci are of low virulence, but this does not exonerate us if untoward results do follow. If the tissues of any organ are in a state of receptiveness for bacterial invasion, then extensive dental operations are apt to cause local infection that less extensive operations might prevent.

CONCLUSIONS

It must be allowed, I think, that dental sepsis per se is very rarely the sole cause of any systemic

condition. It is, rather, a streptococcal overload that should be eradicated if possible. This does not mean that all open dental sepsis such as pyorrhœa necessitates the removal of any or all the teeth, but it does mean that this sepsis should be treated and eradicated. If conservative methods are sufficient to preserve the balance between infecting agent and the patient's resistance, by all means employ conservative methods. If the balance swings against the resistance, then the overload should be removed and the dental surgeon should not be bigoted in refusing to extract infected teeth if conservative methods fail to prevent the infection spreading to more remote parts.

I am of the opinion that, as no conservative procedures yet known are capable of rendering pulpless teeth sterile, or rather, of preserving sterility for any length of time, they should not be tolerated. The only exceptions are the single-rooted upper teeth on which apicectomy can easily and safely be performed. If surgical procedures are necessary in any part of the body, as it is recognised that streptococcal invasion prejudices the success of such operations, no gross dental sepsis should be allowed, particularly if it is connected with pulpless teeth. This also suggests that everything possible should be done to prevent infection of the dental pulp.

Bacteriological investigations have a very important place in the assessment picture, but I sometimes feel that the magnification conferred by the microscope is nullified by the microscopic mind. Careful blood culture work and serological tests such as agglutination are of undoubted value and importance, and may become more so as our technique improves. Only experience, and particularly clinical experience, can at present guide our faltering steps along the right path of a more rational assessment of the evils of dental sepsis. Clinical experience can be aided by laboratory methods, which must, however, remain complementary. Every case must be treated on its merits. Some can shoulder a load of sepsis with much greater impunity than others, but sooner or later, the streptococcal overload will take its toll and therefore should never be entirely neglected. The habits and environment of patients may decide whether the dental sepsis is only a pin-prick or a knock-out blow.

If we can only employ a sweet reasonableness and yet remember Euclid's axiom that the whole is always greater than the part, I feel sure the storm of controversy that has so long raged around this question of dental sepsis will die down, and out of the tempest there will come a ship.

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INDUCTION OF LABOUR FOR DISPROPORTION

A CRITICAL ANALYSIS OF ONE HUNDRED CONSECUTIVE CASES OF SURGICAL INDUCTION FOR REAL OR SUSPECTED DISPROPORTION

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THE problem of the correct way to deal with minor degrees of disproportion between the fœtal head and the maternal pelvis is one which has given rise to a good deal of discussion in recent years. Three ways of treating these cases are universally accepted—viz., Cæsarean section, trial labour, and induction of premature labour. I think I am justified in saying that few, if any, obstetricians resort to induction of labour before the thirty-sixth week of pregnancy, unless in very exceptional circumstances. If the disproportion is so great that induction would be necessary before the thirty-sixth week, it is better, in the interest of the mother as well as the child, to deliver the baby by Cæsarean section. In other words, the treatment of gross degrees of disproportion, except when due to such fœtal abnormalities as hydrocephalus, by deliberate Cæsarean section done just before term is universally accepted.

It is in considering minor degrees of disproportion that one finds two schools of thought—one advocating induction of labour at the appropriate date between the thirty-sixth week and term, the other preferring to allow all such cases to have a trial of labour. So far as the statistical part of what follows in this article is concerned, it is offered as a negative piece of evidence in favour of the method of trial labour, because to my mind it demonstrates the unsatisfactory result of surgical induction of labour.

I am well aware that the theoretical advantages of premature induction of labour are many. I am also well aware that at some future date, when the exact physiological cause of the onset of labour is fully understood, and one is able to apply the exact physiological stimulus, either by injection or by mouth, so as to constitute a medical induction of labour, one will probably have to modify one's views very considerably. But at the present moment medical induction of *premature* labour is both uncertain and not without danger, whereas surgical induction, though more certain, is fraught with very considerable danger, both to mother and child.

The ultimate object of antenatal care is to reduce to a minimum both maternal and fœtal mortality and morbidity. One reason at least why antenatal care seems to be failing in this object is that not infrequently, in trying to prevent one possible disaster, interference is made which leads to a disaster more serious than the imaginary one which an attempt has been made to avoid. Many deliberate Cæsarean sections and instrumental inductions of premature labour can be unquestionably regarded as meddlesome midwifery. Writing on the subject of Cæsarean section and induction of labour, Prof. F. J. Browne [1] says:

"Much of the interference is probably unnecessary, and constitutes meddlesome midwifery, for in most cases delivery would have taken place without trouble had the patient been left alone. The intervention would not matter if these operations were always safe, but we know they are not. I have shown, for example, that out of 173 deaths in nine maternity hospitals, all staffed by experts, 8, or 1 in 20, followed directly on induction;

death being due to sepsis, hæmorrhage or anæsthetic complications."

ADVANTAGES AND DISADVANTAGES OF INDUCTION

Before considering the actual statistics of the cases I have analysed, it will be useful to discuss the theoretical and practical advantages and disadvantages of premature induction of labour for disproportion. The outstanding advantage is obviously that the dangerous results of disproportion in labour are avoided. This is true in the majority of cases, but because the induction is often left until the latest possible moment, and because errors of judgment are inevitable, even by experts, obstructed labour will occasionally occur after induction. One is then faced with the alternative of craniotomy or Cæsarean section, and the latter operation following on the insertion of bougies, bags, or the like, is a most dangerous risk to the patient and one which has a relatively high mortality. If, on the other hand, one resorts to craniotomy after induction the whole object of the interference is nullified. The second great advantage is that a Cæsarean section, with the attendant risks, *may* be avoided. But because the induction of labour is so often entirely unnecessary, and the patients induced would have delivered themselves quite easily when they started labour spontaneously, the Cæsarean section rate is not greatly increased if the practice of giving the patient a trial of labour is carried out. At King's College Hospital the practice of inducing labour for disproportion in primigravidæ has practically been abandoned for the past three years. In 1930, 31 total Cæsarean sections were performed and 76 inductions of labour. In 1934, although the Cæsareans had increased to 46, the inductions had been reduced to 18. Actually in 1934, 40 more patients were delivered in the maternity ward. I realise that these figures cannot be taken too literally, but they illustrate the point I am trying to explain.

What then are the disadvantages and risks of surgical induction of labour in these cases? They are both maternal and fœtal. Of the maternal risks first and foremost comes sepsis. Even the most enthusiastic supporter of induction of labour will have to admit the danger of sepsis. The literature shows clearly that this risk of sepsis is not a figment of the imagination. Hewitt, Towart, and Baird,[2] reporting 34 cases of bougie induction, mention 2 deaths from uterine sepsis, and stress the risk of sepsis even though the bougies are unsuccessful in inducing labour and have to be removed. Morton [3] in 1929 reports 132 cases of bougie induction. There were 4 deaths—2 being due to sepsis. The notifiable morbidity-rate was 18·6 per cent. He compares a series of bougie inductions and bag inductions and concludes that the risk of sepsis is even greater in the case of bag induction. Reis [4] in 1929, also reviewing the history of induction of labour and all the known methods, states that even medical induction increased the rate of morbidity by 15–20 per cent., and quoted a 33 per cent. morbidity for induction by means of a bag. On the other hand Bannister,[5] opening a discussion at the British Medical Association in 1926, reports much better results from the point of view of sepsis. He had only 1 maternal death in 745 cases and only a 4 per cent. morbidity. My own figures amply confirm the great risk of sepsis.

The other maternal disadvantages, although of less importance than the disadvantage of sepsis, are none the less real. Cases are recorded of the uterus having been perforated by a bougie. Occasionally, in unskilled hands, a great deal of placental separation may be caused by bougies with resultant hæmorrhage and fœtal death in utero. In addition there is the strong objection which can be raised against all known methods of induction of labour—namely, that quite often the uterine action in labour is inadequate, so that such complications as inertia, contraction rings, spasm of the lower segment, and retention of the placenta are more common after induced labour than after labour which starts spontaneously. Barnes,[6] writing as long ago as 1868 on the question of induction of labour, says: "Labour finds the uterus in an imperfect state of development, with imperfect contractile power, and with greater resistance of the cervix," and again: "The uterus is called upon—suddenly and before its time—to do that for which it is not prepared." These complications at first sight are not themselves so serious, but with them goes the necessity for increased manipulations—the inevitable increased exhaustion of the patient and so the increased risks of maternal mortality and morbidity. In addition they lead to, in fact are chiefly responsible for, the increased fœtal mortality. This increased fœtal mortality is a further disadvantage of this time-honoured way of dealing with these cases. Bannister,[5] in the same address in 1926 in which he quotes such low figures for maternal mortality and morbidity, has to admit a 12·6 per cent. fœtal mortality, and one is rather amazed to read that this is regarded as a satisfactory state of affairs. The chief object of the interference is nullified if a dead baby is born.

ANALYSIS OF CASES

I have taken 100 consecutive cases of surgical induction of labour during the period 1927–34 at King's College Hospital. I have entirely excluded induction for any other reason such as toxæmia or antepartum hæmorrhage, because in these cases there are additional factors to affect the maternal and fœtal mortality and morbidity. In every case induction was done primarily because it was feared that if pregnancy were allowed to continue there might arise serious disproportion between the baby's head and the maternal pelvis. Only three methods have been employed—bougies, artificial rupture of the membranes, and the stomach-tube (one case). From a perusal of the literature I have come to the conclusion that the result of other methods of surgical induction are little if any better. Of the 100 cases 90 were induced by bougie, 9 by artificial rupture of the membranes. Reliable conclusion obviously cannot be drawn from 9 cases, but the results with artificial rupture of the membranes are better than those with bougies, so that the total figures are improved by their inclusion. I have included them in order to make the sequence consecutive and not in any way selective.

Results of Surgical Induction

Method.	Hours before onset of labour.		Total duration of labour.	
	Pgr.	Mgr.	Pgr.	Mgr.
Bougie (90 cases)	35 hrs., 40 mins.	24 hrs., 5 mins.	32 hrs., 49 mins.	18 hrs., 59 mins.
Artificial rupture of membranes (9 cases)	3 hrs., 30 mins.	1 hour.	22 hrs., 30 mins.	6 hrs., 35 mins.
Stomach-tube (1 case)	48 hours.	—	33 hours.	—

Pgr. and Mgr. = Primigravidæ and multigravidæ respectively.

Of the 100 cases 60 were primigravidæ and 40 multigravidæ. The accompanying Table shows the average time of onset of labour and duration of labour in each group.

The Table shows the prolongation of labour in those cases induced by bougies. Analysing the labour still further in the 90 cases induced by bougies I find that of the primigravidæ 49 per cent., of the multigravidæ 43·2 per cent., were classified as having inertia (average 46·6 per cent.). The forceps rate in the two groups was as follows:—

Primigravidæ	35·8 per cent.
Multigravidæ	5·4 ,, ,,
Average	23·3 ,, ,,

The average forceps rate at King's College Hospital during the past five years is 8·7 per cent., so that in these cases the necessity for forceps was increased nearly threefold. There was abnormal postpartum hæmorrhage in 9 cases, necessitating manual removal of the placenta in 3.

The total stillbirth-rate worked out to be 14 per cent., the average of all cases in the past five years was 5·05 per cent. In the case of the primigravidæ induced by bougie the stillbirth-rate was 20·8 per cent. This single figure alone should surely make one hesitate ever to induce labour by bougie in cases of suspected disproportion in a primigravida. The two reasons for the high stillbirth-rate in these cases are probably the following:—

1. The baby is often premature and therefore less able to stand the stress and strain of a difficult labour, particularly instrumental delivery, than a mature infant.
2. Labour is often prolonged and has to be terminated by forceps.

Bannister mentions the high incidence of prolapse of the cord (1·6 per cent.) but this did not occur at all in this series of cases.

There was one maternal death in the series. The patient was a primigravida, and the induction was by bougies. She was in labour 70 hours, delivered by forceps of a stillborn baby, and had a postpartum hæmorrhage necessitating manual removal of the placenta. There is little wonder that she developed uterine sepsis, after this series of catastrophes. The maternal morbidity was as follows:—

	Per cent.
Group 1.—Total notifiable morbidity	11
Group 2.—Total morbidity (temperature persisting above 99·6° F. with evidence of mild uterine infection) ..	45

The average duration of pyrexia (Group 2) was 10 days. In all but one case the pyrexia followed bougie induction, and they are further classified as follows:—

Notifiable pyrexia.		Pyrexia above 99·6°.	
	Per cent.		Per cent.
Primigravidæ— 10 cases ..	18·8	Primigravidæ— 31 cases ..	58·5
Multigravidæ— 1 case ..	2·7 = 12·2	Multigravidæ— 13 cases ..	35·1 = 48·8

The fact that the morbidity is higher in the primigravidæ than the multigravidæ suggests that the increased maternal exhaustion and increased necessity for interference in the delivery are additional factors.

It may be asked why I have mentioned morbidity other than notifiable morbidity, and argued that pyrexia less than the notifiable one of 100·4° are of little significance. But notifiable pyrexia can often be very misleading. A patient can run a temperature of 100·2° for a month without being regarded as a notifiable case, whereas a patient may have a temperature of 100·6° on two successive evenings and therefore have to be notified. In studying the temperature charts of these cases I noticed what a large number showed a pyrexia about 100° for seven or eight days and sometimes longer, associated clinically with evidence of uterine infection, mild it may be, but none the less definite, and therefore capable of developing at any moment into something much more serious. I think it is very significant that 45 per cent. of the cases should show definite evidence of infection of the uterus. Ninety-nine of these cases were discharged alive and apparently well, but it would be instructive to know the number suffering at a later date from such conditions as chronic salpingo-oöphoritis, chronic subinvolution, chronic endometritis, chronic cervical infection and retroversion, with their accompanying chronic ill-health.

CONCLUSIONS AND SUMMARY

The present article is not designed primarily to discuss the details of trial labour. These are sufficiently well known now. But a few positive points in favour of this method of dealing with cases of minor degrees of disproportion cannot be emphasised too much. It cannot be stated too often or too strongly that the uterus, given a chance to act spontaneously, is often capable of remarkable efforts. The character of the pains, as well as the degree of moulding and flexion of the fœtal head, are unknown factors at the commencement of any labour. No amount of experience or skill can foretell them before labour starts—so why not be honest and admit that these are unknown factors? A uterus acting spontaneously and well at the appointed time will often accomplish with ease, what it may fail to do, and only do with difficulty, if driven into activity two or three weeks early. The argument that trial labour is unsuitable for domestic midwifery is not really as good as it sounds. It is not the method that is employed, but the patient herself and her unfortunate disability that renders her unsuitable for delivery in a private house, whatever the management of the case may be. And if the doctor argues that he cannot afford the time to bear with the uncertainty these difficult cases often occasion, he is not a suitable person to deal with them. We cannot hope to lower maternal mortality if we allow arguments like that to weigh with us:

In the primigravida, therefore, induction of labour, in my opinion, plays no part in the treatment of minor degrees of disproportion, apart from very exceptional circumstances. The points against induction are: (1) high maternal mortality and morbidity; (2) high fœtal mortality which accompanies all methods of surgical induction of labour in primigravidæ.

With multigravidæ the position is very different. In the multigravidæ the method of choice for inducing labour is artificial rupture of membranes. This can be carried out with almost no added risk of sepsis or fœtal death; it is often a very wise measure in order to avoid the results of disproportion. In the case of the multigravida one is dealing with a uterus that has become accustomed to childbearing, and with a passage through which the fœtus will pass, which has been dilated and stretched once before. Therefore because it is safe to employ artificial rupture of membranes as a means of inducing labour in the parous woman, it is often wise midwifery to do so.

I am indebted to Mr. W. Gilliatt and Mr. A. C. Palmer for permission to publish the results of their cases.

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THE EFFECT OF CHLORAL HYDRATE ON THE HEART

By STANLEY ALSTEAD, M.D. Liverp., M.R.C.P. Lond., F.R.F.P.S. Glasg.

POLLOK LECTURER IN MATERIA MEDICA AND THERAPEUTICS IN THE UNIVERSITY OF GLASGOW; PHYSICIAN TO OUT-PATIENTS AT THE WESTERN INFIRMARY OF GLASGOW

CHLORAL HYDRATE was introduced as a hypnotic by Liebreich in 1869, 37 years after its discovery by Liebig. It was a welcome addition to the materia medica, which at that time had only opium and morphine as reliable hypnotics.

Gradually an increasing knowledge of the potential toxicity of the drug has made many clinicians reluctant to use it, particularly in the presence of diseases of the cardiovascular system. Nevertheless it is rare to find an experienced practitioner who can recall any serious mishap attributable to this hypnotic. Hutchison [1] mentions the practice of Dr. G. W. Balfour, of Edinburgh, who "used as his 'routine' treatment for pneumonia a mixture containing 10 gr. of Chloral and ℥ 10 of Tincture of Digitalis given every four hours, which he found enabled most of his patients to sleep through their pneumonia." This is also recalled by Stockman [2] who states that no untoward effect from chloral hydrate was seen in these cases. Allan [3] has frequently used this hypnotic in fairly large quantities—e.g., grs. 60 per day—in cases of cardiovascular disease even when accompanied by Cheyne-Stokes respiration, and he has found no evidence of myocardial weakening as a result. Over 20 years ago Gunn [4] declared that he knew of no reliable clinical or experimental evidence to prove that therapeutic doses of chloral hydrate had any depressant action on the heart. Cushny [5] has voiced the same opinion.

Experiments of toxicological interest have often been carried out with chloral hydrate on laboratory animals. Notwithstanding Gunn's observations [4] to the effect that further clinical evidence was required before the odium of a heart-depressant action should be permanently associated with one of the most certain and reliable of hypnotics, there has been remarkably little clinical investigation of this subject. Glaus [6] has reported a series of cases of cardiovascular disease treated with chloral hydrate. In addition to the hypnotic action of the drug the effects upon blood pressure and urinary output were noted. This author sees need for caution in the use of chloral hydrate when there is evidence of congestive cardiac failure. It is clear, however, from the protocols published that the dosage was usually greatly in excess of the B.P. dose (grs. 5–20).

With a few exceptions [7 8 9] the standard text-books of pharmacology and therapeutics continue to give the impression that chloral hydrate is a dangerous hypnotic. Bastedo,[10] arguing from experimental pharmacology, maintains that:

> "In good-sized doses it is a circulatory depressant, acting most strikingly to depress the heart-muscle, but also to depress the vaso-constrictor centre and the muscles of the arteries. . . . With only slighter than ordinary therapeutic doses the circulatory depression may supervene, so that the drug becomes distinctly dangerous. There are reports of death from only double the dose to which the patient or habitué had been accustomed. Hence the margin of safety with chloral is a narrow one."

In the English edition of the late Prof. Poulsson's [11] valuable text-book it is stated that chloral "must be used with great caution in cases of valvular defects and all kinds of cardiac depression (high fever), and also in pulmonary diseases (pneumonia, phthisis, profuse pleuritic exudations)." Clark [12] mentions "a depressant action upon the heart," and adds "the action is exerted by doses but little above the full therapeutic dose." With regard to the effect of chloral upon blood pressure Clark doubts whether the depressing action is greater than that produced by "equivalent doses of the other powerful hypnotics." Whitla [13] pleaded for "great caution" in its use for patients suffering from fatty hearts or atheromatous vessels and went so far as to say that prolonged administration would cause the heart-muscle rapidly to become fatty. An additional warning is given regarding administering chloral hydrate after delirium has lasted several days, "the heart at this time being especially susceptible to its action." Dilling [14] contends that the combined effects of a depressant action on the cardiac muscle and the lowering of blood pressure, which results from vaso-dilatation accompanied by depression of the vaso-motor centre, make chloral unsuitable for use in heart disease.

CLINICAL TESTS

The present investigation was undertaken in order to assess the value of chloral hydrate as a hypnotic and to note any ill-effects arising directly out of its use. Particular care was taken to record any changes in the cardiac action and in the blood pressure. Observations were made on 55 patients, 6 of whom were children. In 33 cases (60 per cent.) there was clinical evidence of heart disease. Of the remaining 22, though the heart was apparently normal, marked emphysema was found in 7 patients, and 2 others of this group were suffering from acute rheumatism and exophthalmic goitre.

In all but 4 of the patients with cardiac disease, enlargement of the heart was detected clinically. There were 13 with chronic myocarditis, as judged by decrease in the cardiac reserve, alteration of the first heart sound, and hypertrophy of the heart-muscle. Mitral stenosis was the most obvious abnormality in 9 cases and aortic regurgitation occurred either alone or in association with this condition on 4 occasions. Degeneration of the myocardium was attributed to hyperthyroidism in 5 patients. Objective evidence of heart failure—e.g., dyspnœa, cyanosis, and dropsy—accompanied the cardiac lesion in 5 cases. Acute carditis was present in 3 at the time they were receiving chloral hydrate and 1 of these was suffering from subacute infective endocarditis. Conductive disturbances were also represented; 1 of the female patients with a failing myocardium showed electrocardiographic evidence of bundle-branch block, and in an unusual case of hyperthyroidism a succession of cardiac irregularities, including complete dissociation and auricular flutter, were recorded before the administration of chloral hydrate.

Other therapeutic measures were not withheld during the investigation. Thus iodine was given in 2 cases of Graves's disease and probably accounted for a fall in the pulse-rate of these patients. Salicylates were prescribed as usual in rheumatic fever, protein shock therapy with *Bacillus typhosus* was used in rheumatoid arthritis, and injections of bismuth were continued in cases of tertiary syphilis. In 10 patients the administration of digitalis may have modified the action of the heart. The quantity of digitalis and the time when it was given in relation to beginning chloral hydrate therapy make it unlikely that this was of any significance in at least 4 of these cases.

Dosage.—It was not found necessary to exceed the official dose (B.P. grs. 20) to produce a hypnotic

effect. In order thoroughly to test the possible toxic action of such quantities without prolonging the investigation unduly for the patient, two doses of grs. 10 each were given during the day and one of grs. 20 at night. This was continued for 7–10 days in most cases, about grs. 350 of chloral hydrate being given during this time. The well-known potency of this hypnotic was very evident. Sleep was induced within half an hour and lasted until the patients were wakened some seven or eight hours later. One man (a sailor) described the effect in characteristic fashion when he said that after his evening dose he was soon "dead to the world" and he knew nothing more until breakfast-time the following morning. After his meal he received a further grs. 10 of chloral hydrate and, he declared, this sent him off again, so that he was awake only a few hours out of the 24. Drowsiness was often so persistent that it was sometimes difficult to rouse patients sufficiently to take their meals. This degree of hypnosis seemed to be as much as would ever be required under clinical conditions. It is not suggested that excessive drowsiness on waking is characteristic of chloral. On the contrary, in the cases studied drowsiness during the day was clearly due to the doses of the drug given in the daytime; for when these were omitted, only the hypnotic action of the evening dose was observed.

ILL-EFFECTS

Stomach.—Chloral hydrate is known to be irritating to the stomach unless well diluted with water. For this reason its use is generally avoided in patients suffering from gastro-intestinal disturbances. In the present series 6 of the patients (11 per cent.) complained of nausea and vomiting attributable wholly or in part to this hypnotic. On two occasions the stomach was probably irritable owing to congestive heart failure and in a case of uræmia nausea was already troublesome before chloral hydrate was given. One man who was being treated for hyperchlorhydria (Case L) complained that his gastric discomfort was intensified. The stomach was certainly normal in the remaining patient and all disagreeable symptoms ceased on further dilution of the drug with weak peppermint-water.

Skin.—The eruptions that are sometimes described as a result of giving chloral hydrate did not occur once in this group of 55 patients. Three patients, however, suffered from smarting or burning of the edges of the eyelids. The conjunctivæ were injected and excessive lacrymation was a source of annoyance. In another patient the eyes were obviously suffused but no complaint was made. This complication is mentioned by Ghosh.[15]

Respiration.—During sleep the respiratory rate was diminished, but not more than might occur in natural sleep, and evidence of excessive medullary depression—e.g., cyanosis, irregularity of breathing, and so forth—was never seen.

Tolerance.—A neurotic woman suffering from Graves's disease noticed that the hypnotic action of the drug became very much less after about seven days. No other instance of tolerance was seen.

EFFECTS ON CIRCULATION

Heart.—Examinations of the heart were made before, during, and after giving chloral hydrate. Special attention was paid to changes which might be regarded as indicating depression of the myocardium, such as (*a*) changes in rate or rhythm, (*b*) alteration in the position of the apex-beat and the character of the cardiac thrust, (*c*) weakening of the heart sounds, especially the first sound at the apex, (*d*) the appearance of bruits, or alteration in the character of pre-existing murmurs, and (*e*) evidence of diminished cardiac reserve.

In a case of disseminated sclerosis (Case A) slight softening of the heart sounds was noted towards the end of the period of observation. There was no other abnormality in the heart and except for drowsiness the patient was unaware of any change in his general condition. The electrocardiogram before and after giving chloral hydrate was normal and unaltered by the drug. The blood pressure changed from 125/70 to 110/70 mm. Hg but the pulse-rate remained at about 75 throughout. These findings applied also in Case B, but here the blood pressure increased from 100/55 to 115/65 mm. Hg and early slurring of Q R S was seen subsequently in lead II. of the electrocardiogram.

In Case C the volume of the first heart sound, which was diminished at first owing to cardiac failure, gradually increased as the patient's condition responded to rest in bed and digitalisation, despite a total of grs. 390 of chloral hydrate given during 11 days. The blood pressure also increased from 139/95 to 145/100 mm. Hg. Though the electrocardiogram showed the early effects of digitalis there was no alteration in the final record.

The cardiac thrust became more forcible in a boy known to be suffering from rheumatic carditis. He received chloral hydrate for 19 days but the change in physical signs was consistent with an advancing rheumatic lesion rather than depression caused by the hypnotic. The blood pressure changed from 105/50 to 95/65 while the pulse-rate was unaltered. The P-R interval in the electrocardiogram measured 0·22 sec. before and after giving the drug.

In Case D the abnormal accentuation of the first sound which accompanied left-sided hypertrophy was considerably diminished after grs. 150 of chloral hydrate, and a systolic bruit previously heard at the apex was no longer audible. The blood pressure fell from 150/70 to 120/60. Though the cardiac action was apparently regular on physical examination the first electrocardiogram showed auricular fibrillation. The record obtained after the chloral hydrate had been stopped was normal except that P-R measured 0·2 sec. and the voltage was low. It was impossible to continue with the investigation as the patient wished to go home; this she was able to do without developing shortness of breath, &c., on ordinary exertion.

In Case E an aortic diastolic murmur was not so easily heard after the patient had received a total of grs. 630 of chloral hydrate over a period of 15 days, otherwise the physical signs in the heart were unchanged.

Pulse-rate.—The trend of the pulse-rate was noted carefully throughout the investigation but sudden and temporary variations were ignored. In 43 patients (78 per cent.) there was change in heart-rate. In 8 cases (14 per cent.) the rate diminished appreciably, but circumstances other than the use of chloral hydrate would account for the slowing of the heart in at least 6 of these patients, 3 of whom were receiving digitalis, 1 salicylates, and 1 iodine, while it was known that the pulse-rate in another was variable owing to heart-block. In only 2 patients could the slowing of the pulse-rate be attributed to chloral hydrate and in both instances the fall was to the extent of 10 beats per minute—i.e., from 110 to 100, and from 80 to 70 respectively. Neither of these patients showed any deterioration in physical signs on re-examination of the heart.

A slight degree of tachycardia was observed in 4 patients. Pyrexia, progressing uræmia, and infective endocarditis were regarded as accounting for this in 3 of the cases and in none did the increase in rate exceed ten beats per minute.

Blood pressure.—Readings were taken with a baumanometer within two hours of giving the morning dose of chloral hydrate. On every occasion

the right arm was used and the patient was in the recumbent posture. It was often necessary to rouse patients from sleep in order to attach the apparatus. In 13 cases (23 per cent.) there was no change in the blood pressure. A fall in pressure was noted in 29 patients (53 per cent.); with a few notable exceptions, however, the decrease was not very considerable. In 13 patients (23 per cent.) there was

TABLE I

The Effect upon Blood Pressure

—	Fall of blood pressure (systolic).								Increase of blood pressure (systolic).			
Mm. Hg ..	5	10	15	20	25	30	35	40	5	10	15	30
Number of patients ..	14	5	2	1	2	1	2	1	4	6	2	1
Percentage of series ..	25·5	9·1	3·6	1·8	3·6	1·8	3·6	1·8	7·3	11	3·6	1·8

actually an increase of blood pressure between 5 and 30 mm. Hg following the administration of chloral hydrate (Table I.). The original ratio between the systolic and diastolic blood pressures tended to be maintained in 40 of the 55 patients (73 per cent.). In 10 cases (18 per cent.) in which the systolic pressure was raised the diastolic reading was unchanged. Five patients (9 per cent.) showed alterations of 5–15 mm. Hg in the diastolic pressure while the systolic pressure moved in an opposite direction.

The way in which these changes in blood pressure were distributed between the two groups of patients—(1) those with heart disease, and (2) those with normal hearts—is shown in Table II.

TABLE II

Comparison of Two Groups of Patients

Blood pressure (systolic).	Patients with heart disease.		Patients with normal hearts.	
	Number of patients.	Percentage of group.	Number of patients.	Percentage of group.
Unchanged	8	24	5	22
Lowered	15	45	14	61
Raised	10	30	3	14

The condition of 3 patients calls for special mention.

Case D (chronic myocarditis).—There was a decrease of 30 mm. Hg in the systolic pressure but no apparent deterioration in the action of the heart occurred. On the contrary, the disappearance of fibrillation and the return of a normal rhythm may be regarded as evidence of a favourable response to other measures notwithstanding the simultaneous administration of chloral hydrate.

Case F (chronic myocarditis).—During the period of observation signs of cardiac failure disappeared though chloral hydrate was being given. On resuming work, however, signs of failure returned and with the fall in blood pressure (35 mm. Hg) the T-wave in lead III. of the electrocardiogram became deeply inverted. These circumstances hardly justify incriminating chloral hydrate as the chief cause of the decrease in blood pressure.

Case G.—For two years this patient had suffered from palpitation accompanied by attacks of giddiness. The transient irregularity turned out to be auricular fibrillation and giddiness was attributed to fluctuations in the blood pressure likely to occur under these conditions. The electrocardiogram showed that a paroxysm of fibrillation immediately preceded the final reading of the blood pressure.

Electrocardiogram.—As might be expected from the diseases enumerated many of the electrocardiograms were abnormal from the beginning. Significant changes were observed in 14 patients (25 per cent.) during the administration of chloral hydrate. The alterations did not always indicate deterioration of the heart; sometimes, indeed, the reverse was true. Thus in 1 patient, though the myocardium had been severely affected and grave interference with conduction was evident in the eletrocardiographic records, auriculo-ventricular rhythm was resumed despite medication with chloral hydrate. Similarly, on two occasions (Cases H and D) auricular fibrillation disappeared while the hypnotic was being given in therapeutic doses. Serial records in Cases I and J showed that chloral hydrate did not interfere with the usual stages of recovery of the heart from digitalisation.

TABLE III

Changes Indicating Depression of Conductivity

Case	Heart-rate before chloral	P-R interval (secs.)	Heart-rate after chloral	P-R interval (secs.)	Remarks.
K	88	0·16	116	0·18	Choreic movements again present at last exam.
L	84	0·20	82	0·22	Clinically normal heart.
M	72	0·24	78	0·26	Clinically normal heart.
N	84	0·28	86	0·30	Bundle-branch block.

While it seemed probable that the prolongation of the P-R interval was due to chloral hydrate in the last 3 patients, in Case K tachycardia actually resulted from a recurrence of chorea and the slight change in the electrocardiogram also could reasonably be attributed to this, especially as three intermediate records showed no change. Shortening of the P-R interval was noted in Case O where it measured 0·22 sec. when the heart-rate was 88, whereas after chloral hydrate it diminished to 0·2 sec. with a slightly greater heart-rate of 92 per minute. Early slurring of Q R S developed in 1 patient but the significance of this is doubtful as the same feature disappeared from the records of 2 others in the same circumstances. Bundle-branch block in Case N became more definite under chloral hydrate—i.e., inversion of the T-wave in lead I. was more pronounced. Separation of the P- and T-waves contributed to this appearance.

DISCUSSION

That chloral hydrate in ordinary doses is a remarkably effective hypnotic almost entirely free from the disadvantages of tolerance and habit formation is confirmed by this investigation. On the whole it seems that the drug is best avoided in the presence of gastro-intestinal irritation, but this drawback can be practically eliminated by diluting sufficiently with water. Smarting of the eyelids and lacrymation were troublesome in about 5 per cent. of the patients under observation. This occurred only after several days during which the dosage had been frequent and substantial. Under ordinary clinical conditions, when a single dose is given every night for a week or two, it is reasonable to assume that these ocular complications would be less likely to develop.

Physical examination of the heart yielded no unequivocal evidence of weakening of the cardiac

action by chloral hydrate. Only 3 patients (Cases A, B, and D) appear to admit of some discussion on this point. From the clinical data it will be seen, however, that though some slight abnormality is mentioned the results of further investigation of the cardiovascular system were inconsistent with cardiac damage. On the other hand, clinical evidence of improvement in the action of the heart (attributable to rest in bed, &c.) was seen in 2 cases. No significant changes occurred in the heart-rate.

About half of the patients showed some fall in blood pressure. In the great majority of these the decrease did not exceed 15 mm. Hg and as there was no alteration in the condition of the heart the change in blood pressure was regarded as being consistent with prolonged periods of sleep and almost continuous drowsiness. In the few cases where the blood pressure was depressed more than 15 mm. Hg conditions other than the administration of the hypnotic were regarded as being the main causes. Nearly a quarter of the patients were found to have an increased blood pressure after taking chloral hydrate. It is difficult to say what may be the exact significance of these findings, but they certainly discount to some extent (though not entirely) the results which show the opposite effect on the blood pressure. The figures in Table III. do not lend support to the view that chloral hydrate is particularly detrimental in the presence of heart disease.

In Cases L, M, and N (Table III.) slightly delayed conduction was noticed. These must be compared with Case O in which the findings were exactly the reverse. These changes are regarded as being too trivial to be of clinical importance.

CONCLUSION

Chloral hydrate in therapeutic doses has no harmful effect upon the heart. When the blood pressure is lowered during chloral hydrate administration the effect is not much greater than occurs in natural sleep.

I am indebted to Dr. John Gracie, visiting physician to the Western Infirmary, for permission to publish this work, and to Sister J. R. Thompson for her willing coöperation.

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FOLKESTONE HOSPITAL.—Extensions to this hospital, at a cost of £85,000, are contemplated. The institution would then have 165 beds, 16 maternity beds, 25 private wards, a new children's ward, and a pathological department. Some funds are in hand, but £60,000 will have to be raised.

ON THE POSSIBLE TRANSMISSION OF HÆMOLYTIC STREPTOCOCCI BY DUST

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RECENT attempts to trace the source of puerperal infections (D. C. Colebrook, 1935)[1] have suggested very strongly that in the majority of cases—at least 80 per cent.—the streptococci had been conveyed to the genital tract from the nose or throat of the mother herself, or of someone in contact with her. In a minority of cases no such probable source was found, and the question arises whether in these cases the hæmolytic streptococci may not have reached the genital tract by the agency of air-borne particles. This possibility seems the more likely in view of the recent finding by Cruickshank (1935)[2] that the air of wards in which patients suffering from burns were nursed frequently yielded fairly abundant cultures of hæmolytic streptococci, whereas the air of the medical wards in the same hospital yielded none, and that of the surgical wards only a few colonies. In private houses at the time of a confinement there must sometimes be persons with septic foci infected by these streptococci, such as children with otorrhœa or impetigo, or adults with infected wounds who, although not in close contact with the mother during labour or in the puerperium, may have contaminated the dust, which in turn may originate a puerperal infection. This possibility must be increased where there is overcrowding.

In Queen Charlotte's Isolation Hospital for puerperal fever all cases are admitted into single bed wards. In a considerable number the hæmolytic streptococcus is the infecting organism. It was decided in such cases to investigate whether the dust in the ward became contaminated with hæmolytic streptococci and, if so, to what degree and for what period. By the examination of such special cases some further knowledge of the possibility of infection by dust might be obtained.

INVESTIGATIONS

Tests on the air and the dust in the wards were carried out between the third and the sixth day after admission as follows.

Two horse blood-agar plates were exposed by the night nurse after she had settled the patient for the night. One was placed on the trolley about 1½ yards from the foot of the bed and the other on the locker beside the bed. These were closed by the nurse when she woke the patient in the morning and were therefore exposed for about six hours. Two more plates were exposed in the same places by the nurse who made the first perineal toilet of the patient. These were left open while she was doing this and then closed. They were open for about twenty minutes to half an hour. There would be more movement in the ward during this period than during the night.

While the ward was being swept and polished two more plates were opened, one being placed on the trolley at the foot of the bed, as in the other cases, and the other on the floor. These were exposed for about twenty minutes and were in a more dusty atmosphere than the others.

The six plates were incubated over-night in anaerobic conditions, because this helps to keep down the saprophytic organisms and also shows up the hæmolytic streptococcus colonies more clearly (R. M. Fry, 1933).[3] The number of the latter were counted and one or more subcultured and tested for soluble hæmolysin production. The total number of hæmolytic streptococcus colonies on all these six plates was taken as an "index of contamination" of the ward.

RESULTS

It was found that the hæmolytic streptococcus occurs in the dust of single bed wards where cases infected with this organism are nursed, and not to anything like the same extent in the wards of patients with sepsis due to other organisms. This is shown clearly in Table I. The index of contamination for the six control cases is low, while that of the other cases is much higher in general.

TABLE I

Index of contamination of ward.	0	1–2	3–5	6–10	11–20	21–50	51–100	Over 100
Cases infected with— Hæmolytic strep. .	0	2	3	5	3	9	3	2
Other organisms .	3	3	0	0	0	0	0	0

With regard to the occasional presence of hæmolytic streptococci in the dust of a ward used as a control, there are two possibilities. The organism might have been left by a previous occupant, or it might have been carried there on the broom, or on the shoes or clothing of the staff, as the five single bed wards on each floor open along the same side of one corridor. In one case the latter possibility was considered likely, as the hæmolytic streptococcus was found to be the same type serologically as the infecting strain of a case of puerperal scarlet fever with a high index of contamination on the same floor.

A similar result to that shown above was obtained from experiments made in two wards of five beds each. In one of these were convalescent cases infected with hæmolytic streptococci, and in the other, patients recovering from other infections.

Two plates were exposed in the middle of each ward during sweeping, one on the floor and the other on the table. Their incubation and further examination was as previously described. The index of contamination, calculated as the total number of colonies on the two plates in this experiment, was 55 in the first ward and only five in the second. (The control ward, i.e., with patients *not* infected by hæmolytic streptococci had, a week or two previous to the experiment, housed some patients who were convalescent from an infection with that organism, and had not been disinfected since their discharge.)

The twenty-seven cases infected with hæmolytic streptococcus, the dust of whose wards was tested, were not selected in any particular way. Their clinical condition varied from a mild localised infection of the genital tract to a local infection plus pelvic cellulitis, general peritonitis, puerperal scarlet fever, and septicæmia. In a proportion of all these types of infection the hæmolytic streptococcus was isolated from the respiratory tract, either the throat, nose, or naso-pharynx. While the number of cases in each class is too small to allow any definite conclusions to be drawn, there is no evidence that the degree of contamination of the dust is correlated with the severity of the clinical condition or infection of the respiratory tract. The data for the twenty-seven cases is classified in Table II. according to their clinical condition. It is of interest to note that in only two cases was the amount of lochia in excess of the normal. It was found, however, that in two cases that were examined in greater detail the index of contamination did decrease as the patient recovered. The cases examined were two of the puerperal scarlet fever cases of Table II. The six plates, from which the index of contamination was found, were exposed at intervals of twenty-four to forty-eight hours during the whole of the patients' stay in hospital—thirty-one days in one case and seventeen days in the other. In both, the hæmolytic streptococcus persisted in the cervix until the day of discharge.

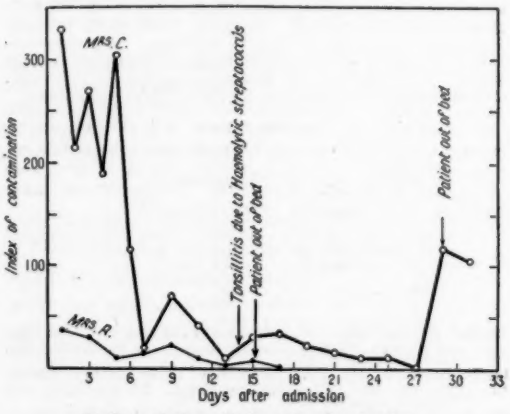
TABLE II

Type of case.	Source of hæmolytic streptococcus: Cervix.	Source of hæmolytic streptococcus: Resp. tract.	Cases.	Index of contamination for each case.
Mild local	+	..	4	10, 16, 29, 66
Infection	+	+	2	12, 84
Severe local	+	..	3	4, 6, 7
Infection	+	+	2	3, 13
Mild local and pelvic ..	+	..	1	4
Severe local	+	..	2	23, 33
and pelvic infection ..	+	+	5	2, 2, 23, 25, 78
Puerperal scarlet fever ..	+	..	1	6 (*a*)
2 cases with septicæmia	+	+	4	29 (*a*), 32, 271, 981 (*a*, *b*)
General peritonitis (opened and drained)	+	+	1	20 (*a*)
Septicæmia	+	..	2	10, 43 (*b*)

(*a*) = patient died. (*b*) = lochia in excess of normal.

The decreasing index of contamination is shown in the Figure.

It is interesting to notice that Mrs. C. developed tonsillitis on the fourteenth day after admission, and a culture from the throat showed a nearly pure growth of hæmolytic streptococcus, serologically identical with the cervical strain. The figure shows that there was a slight increase in the index of contamination at this time, though whether this is



Daily variation of index of contamination.

caused by the tonsillitis it is impossible to say. The experiment also shows that when this patient was out of bed, and therefore more likely to disturb any dust, there was a marked rise in the number of colonies.

VIABILITY OF THE HÆMOLYTIC STREPTOCOCCUS IN DUST

It is of some importance to know if the hæmolytic streptococcus will live in the dust of the room when the source of contamination is removed. Two experiments were made to investigate this.

In the first, two plates were exposed for six hours in a room immediately after the patient had died and the body been removed to the mortuary. The windows were shut and the doors locked so that there were no currents of air, and the bedding, &c., was left in situ. Plates were exposed on three more occasions with the same conditions and finally while the floor was swept and the bedding shaken. The results are shown in Table III.

TABLE III

Date.	Index of contamination.	Remarks.
19/10/35	320	Two days before death.
21/10/35	28	After removal of body.
22/10/35 A.M.	0	Room undisturbed.
22/10/35 P.M.	0	,, ,,
23/10/35 A.M.	0	,, ,,
23/10/35	90	While sweeping for 15 minutes.

In the second experiment, after the original test, the patient was transferred to another ward. At various intervals two plates were exposed while the bed, which she had occupied, was stripped and remade and the dust swept from one corner of the room to the other. The results obtained are shown in Table IV.

TABLE IV

Date.	Index of contamination.	Remarks.
5/2/36	5	Patient in room. Routine sweeping.
6/2/36	42	No patient. Room swept and bed remade.
7/2/36	36	,,
8/2/36	21	,,
10/2/36	70	,,

There seems to be no doubt that the streptococcus will live in the dust for several days and that its presence can be detected more readily when the air of the room has been disturbed.

Dr. L. Colebrook has kindly allowed me to quote an experiment carried out by him on the same subject. A broth culture of hæmolytic streptococcus was sprayed into a dusty cupboard. At intervals the dust was raised and allowed to settle on horse-blood agar plates. After incubation, hæmolytic colonies were subcultured and tested in the way described above. It was found that the organisms lived for ten weeks. The experiment is still continuing. Some of the contaminated dust was also kept in a Petri dish exposed to light and under these conditions they also lived for ten weeks.

DISINFECTION OF ROOMS CONTAMINATED WITH HÆMOLYTIC STREPTOCOCCI

Since it was found that hæmolytic streptococcus can live in dust for many days or weeks, tests were made of the efficacy of the method employed for disinfecting the rooms after they were vacated by the patient. The procedure was to spray the room, using an Enot's spray, with half to one pint of commercial formalin (40 per cent. formaldehyde) either undiluted or diluted with one or two parts of water. The room was sealed and left for at least twenty-four hours. The windows were then opened, and when the room was sufficiently aired it was thoroughly cleaned in the usual way. The two blood-agar plates were exposed for half an hour during this cleaning. The 40 per cent. formaldehyde was strong enough to kill the hæmolytic streptococcus, and it was noticed that very few saprophytic organisms grew on the plates. With the weaker solutions hæmolytic streptococcus was found to persist on two of the five occasions on which this test was made, and the growth of saprophytes was much greater.

IDENTIFICATION OF THE DUST STRAINS

Since hæmolytic streptococcus is found in the wards occupied by patients infected with this organism and not to any extent in other wards, it suggests that the patient is the source of the organism. This was confirmed by the serological examination of the patient's infecting strain and that recovered from the dust of her ward. Dr. Dora Colebrook very kindly undertook these tests. The method employed was the direct slide agglutination with absorbed sera by the technique introduced by Griffith (1935).[4] The details of the test, its interpretation, and any technical difficulties that may arise have been fully dealt with by Dr. Colebrook in her paper (1935).[1]

Out of twenty-seven cases the infecting strain was typed in 18. The remainder may not have been one of Griffith's types, or the suspensions tested may have been insensitive or were unusable. Among these 18 cases there were 12 types of streptococcus, and not more than 3 of any one type. This was fortunate as it enabled the strain from the dust to be definitely associated with one patient. The strains from a few only of the plates exposed for each patient were tested, as the task of examining every one appeared an unnecessary labour. The results were as follows (Table V.).

TABLE V

Number of dust plates of 18 typed cases from which hæmolytic streptococci were isolated	199
Dust strains tested	51
Dust strains the same as the corresponding infecting strain	39

Those obtained from a room after fumigation were in each case the same as the infecting strain of the patient who had occupied that room. On three occasions two types of hæmolytic streptococcus were isolated from one plate. One of these was the patient's own type and the other that of the previous occupant who had been removed to the convalescent ward a week before. As mentioned above a strain recovered from the dust of a ward occupied by a control case was the same as the infecting strain of a case of puerperal scarlet fever, with a high index of contamination, who was nursed on the same floor but in a different ward.

AN ACUTE THROAT INFECTION ATTRIBUTABLE TO DUST

With regard to the experiments set out in Table IV. it is of interest that the person responsible for making the bed and sweeping the floor, in spite of wearing a mask consisting of two layers of muslin with paper in between, over nose and mouth, contracted an acute pharyngitis and adenitis due to a hæmolytic streptococcus on Feb. 10th, 1936. This organism was serologically identical with that grown from the dust, and from the cervix of the patient who had been in the ward. There was no direct contact with the patient but only with the dust after the patient had been removed to another ward. Here apparently is a clear case of infection by dust.

In contrast to this experience, it may be mentioned that two nurses who spent several hours each day in the room of a dying patient with an index of contamination of 981 did not become carriers or contract an infection. They wore similar masks to that described above all the time they were in the ward.

An experiment made by Dr. L. Colebrook has shown that hæmolytic streptococci maintain their mouse virulence in dust undiminished for 25 days.

SUMMARY

The dust of twenty-seven single bed wards housing patients who are discharging hæmolytic streptococci was always contaminated with that organism, and in most cases the strain isolated from the dust was proved to be identical with that infecting the patient.

The dust of similar wards housing patients infected with other organisms seldom yielded hæmolytic streptococci, and then only very scanty growths.

Spraying with formalin (40 per cent. formaldehyde) destroyed the hæmolytic streptococcus in rooms contaminated with that organism.

A case is reported in which exposure to dust carrying hæmolytic streptococcus was almost certainly responsible for an acute pharyngitis.

Although no opportunity has occurred for investigating the point, it would seem unlikely in view of the experiments reported by Dr. L. Colebrook (1933)[5] that a healthy throat carrier of hæmolytic streptococcus creates a zone of streptococcus-carrying particles around himself.

I wish to express my thanks to Dr. L. Colebrook for his encouragement and interest in this work; to Dr. Dora Colebrook for undertaking the serological investigations described; to the resident medical officer, Dr. M. Kenny, and to the sisters and nursing staff of the hospital for their willing coöperation.

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THE TREATMENT OF PHLEBITIS IN VARICOSE VEINS*

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THE conservative treatment of phlebitis in varicose veins has proved unsatisfactory and the purpose of this paper is to present a new method of treating this rebellious disorder, which so often terminates in a permanently damaged extremity.

Varicophlebitis differs from ordinary phlebitis because the blood stream that feeds it is stagnant. One would therefore expect, as indeed one finds, that the activity of the inflammatory process is related to the speed of the blood stream. In other words, subacute or chronic infections are the rule; and quiet latent infections, which may be symptomless, occur frequently. Occasionally an acute inflammation is met with; it may follow the establishment of a septic focus elsewhere or be produced by severe trauma. This acute phlebitis tends to subside and then falls into the large group of subacute, chronic, and latent infections which will now be considered.

Phlebitis in varicose veins is extremely common (Fig. 1). At least half of all varicosed extremities have infected veins. This startling fact was first pointed out by de Takats,[1] who actually cultured bacteria from isolated vein segments that he excised in a general group of varicose vein cases; half of these developed a bacterial growth in 5–10 days. These bacteria were slow-growing and of low virulence. As I recently pointed out,[2] clinically one meets with unexpected "flare-ups" following the injection treatment which have an incubation period resembling that of the bacteria in de Takats's cultures. It is apparent from this experimental and clinical evidence that phlebitis is often present in a quiescent state and may be innocently excited by the inexperienced operator.

The sedimentation-rate, which I suggested in 1934 as the best diagnostic sign of phlebitis, has been used by me consistently since then with the result that my original confidence in this test has been strengthened. With its assistance, after proper evaluation, the injection treatment of phlebitis is made safer and more controllable.

What has been done in the past for phlebitis of varicose veins? With the establishment of the diagnosis, the patient was put to bed, the extremity elevated, and cold applications applied locally. After a variable uncertain period the patient was allowed up and the phlebitic extremity treated in a variety of fashions. Elastic supports, X ray therapy, and thermal baths were some of the procedures used. A few bolder spirits advised injections after healing was completed, setting arbitrary time limits of six months to two years for this to take place. The whole picture was a confused and timid one, with the result that few patients escaped permanent leg damage. The old conservatism was due to two reasons: the first was the fear of injecting an inflamed vein and thereby spreading the process, and the second the dread of embolism.

The modern method of treating inflamed varicose veins is to sclerose them as soon as possible. This newer form of attack is rationally sound and is based on the following premises: (1) phlebitis in varicose veins rarely heals spontaneously; (2) the danger of embolism is greater in the untreated cases; (3) temporising means permanent lymphatic and tissue damage; and (4) sclerosing injections can safely occlude the dilated infected vessels.

The chronicity of varicophlebitis has been stressed before. It is, however, not generally recognised that evidences of infection may be present many years after the apparent subsidence of acute phlebitic infections. I have seen many patients in whom traces of phlebitis persisted 5–20 years after the original attack. The following is a short history of such a case.

FIG. 1.—Phlebitic varicose veins: no tenderness, thrombosis, or hyperthermia. Varicose ulcer present. Sedimentation-rate 20 minutes.

Mrs. A., aged 52, had had varicose veins for eighteen

* Read before the East Side Clinical Society, New York, 1935.

years. The first attack of acute phlebitis ten years ago was treated by rest in bed for two weeks. A second attack of phlebitis occurred eight years ago. In her last attack she was in bed three weeks; spontaneous tender thromboses were noted, and a mild state of lymphœdema with fibrosis was present on both legs. The sedimentation-

FIG. 2.—Bilateral lymphœdema resulting from untreated varicophlebitis. The pigmented areas are hard and tender.

rate was 45 minutes. There was latent phlebitis as a result of the original acute infection eight and ten years ago. Injection treatment was uneventfully successful.

In other patients, a puerperal or post-operative varicophlebitis which has been treated conservatively is the starting-point of a chronic infection which often persists indefinitely although the original insult dates back many years. It is evident, therefore, that time does not cure these cases. Delay in treatment on this score is unwarranted and is more dangerous than careful obliteration of the infected varices. It is a common experience to find flare-ups due to trauma of phlebitic dilatations. There is also the danger of an acute activation following a general infection or the establishment of a new septic focus. These recrudescences may cause the formation of friable clots and become a dangerous source of emboli. Furthermore, any future obstetrical or operative procedure becomes a hazardous affair in the presence of infected veins. Quiet careful obliteration, in the manner to be described, effectively removes these potential sources of embolism

Lymphœdema, to some degree, invariably complicates varicophlebitis as time goes on, and once it has been established it tends to persist.[3] The lymphatic damage goes on to fibrosis and ulceration, causing deformity and disability. One should consequently aim to stop the spread of infection into the lymphatic system before this permanent damage occurs (Fig. 2).

That sclerosing injections can be safely used has been my experience in 300 cases. Working independently, Delater and Chailly [4] in 1934 reported on their method of arresting active varicose phlebitis by the injection of sclerosing fluids. They did not present any definite technique, merely advising the usual injections. This is incorrect as will be pointed out later.

In order to safely treat phlebitis in varicose veins one must understand the flare-up reaction following an injection. This inflammatory phlebitic response points to the existence of an active phlebitis. It is identified by an incubation period of 5–10 days and a tendency to migrate along the course of a vein. This is in contrast to the non-phlebitic response of an ordinary varicosity which does not migrate and appears in 1–3 days after a treatment.

The injection method should be so gauged as to avoid flare-ups. A careful technique must be followed. The only patients excluded from treatment are those with the relatively rare acute widespread processes. In these occasional cases treatment is delayed until the phlebitis is subacute or chronic. The vast majority of cases of phlebitis are immediately amenable to the following plan.

TECHNIQUE AND RESULTS

After a careful history and physical examination, the sedimentation-rate is taken by the Linzenmeier technique using 5 per cent. sodium citrate. The interpretation of this test is important. In the absence of any other infection, a rapid rate points to phlebitis. The latency of the infection is roughly proportional to the sedimentation time, as follows:—

Below 30 mins.—an active infection.
30–60 mins.—a fairly active infection.
60–90 mins.—a probable latent infection.
Over 120 mins.—probable absence of infection.

The initial injection should always be a mild one. I begin with 1 c.cm. of 60 per cent. invertose solution in all cases with a sedimentation-rate over 30 mins. With a more rapid rate, one should start with normal saline solution or 2 minims (0·1 c.cm.) of invertose. It is dangerous to begin any treatment with quinine or other strong irritants, no matter what the sedimentation-rate may be. The succeeding injections are gradually made stronger, endeavouring at all times to keep the reactions below the flare-up point. The strength of action may be increased by using larger quantities of the same irritant or by substituting the next stronger irritant in the series. The three most generally used solutions in the order of increasing sclerosing action are: invertose, sodium morrhuate, and quinine.

It will be found that the reactions produced even by careful treatment will be different from those obtained in uninfected veins. In phlebitic vessels they will often be delayed, depending upon the incubation period of the bacteria involved. Slight migration of the response may be noted and healing is slower than usual. Sometimes a double reaction will be noted. The initial chemical irritation may subside, to be followed by a second phlebitic reaction a week later. It is therefore important not to treat these patients more often than once a week.

The reactions following injection become more normal as the case progresses until no signs of phlebitis remain. All the cases in my series were finished with strong irritants. After the fifth injection, in most instances, a fairly strong solution like sodium morrhuate 5 per cent. was well borne. In 60 per cent. of the cases quinine was used for the final injections with good results. Apparently the successive mild phlebitic responses to chemical irritation increased the patient's resistance to his own infection. In this connexion it is interesting to note that Du Laurier [5] in 1931 advocated vaccine therapy as a preliminary to the injection treatment of phlebitis. The 300 patients that have been injected by me under this plan of treatment have all gone on to an uneventful cure. I feel sure that phlebitis should no longer be considered a contra-indication to the injection treatment of varicose veins.

CONCLUSIONS

(1) Phlebitis in a subacute, chronic, or latent form complicates about 50 per cent. of cases of varicose

veins. (2) In such cases it is the starting-point of a pernicious cycle which permanently damages the superficial tissues of the extremity. (3) It can and should be treated early by a special injection technique. (4) The sedimentation-rate is useful as a guide for treatment. (5) By this method 300 cases have been treated with uniformly good results.

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TREATMENT OF TUBERCULOUS CERVICAL GLANDS

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THOUGH cervical-gland tuberculosis is steadily becoming less frequent [9] it remains a relatively common condition, particularly in certain parts of this country.[8] On my dispensary register for 1934 were 978 patients suffering from all forms of tuberculosis, drawn from the north-eastern district of the county of Durham, on the south bank of the Tyne, and 195 of these (20 per cent.) were cervical-gland cases. Yet despite this frequency and the fact that most practitioners must encounter the disease from time to time, medical text-books as a whole [2 4 6 8 10 11 13–16] appear to have no unanimous opinion about treatment, though methods in common use are variously recommended. To test certain of these methods I have applied them proportionately to a total of 277 personal cases, and by comparing the results I have evolved a routine for dealing with any given case.

METHODS OF TREATMENT

Sanatorium.—Pure sanatorium routine, under ideal conditions of hygiene and climate, is regarded as preliminary treatment for all cases by several authorities.[2 4 6 7 10 13–16] I am opposed to it primarily on grounds of expense and inexpediency. For any State-aided tuberculosis scheme, the cost of providing sanatorium accommodation for such numbers as I have quoted, or, alternatively, the exclusion for their benefit of sufferers from other forms of tuberculosis, could only be justified if cervical-gland patients were not able to be as effectively cared for at home. In view of results obtained by ambulant methods I have satisfied myself on this point, and now admit to institutions only patients with certain complications, which form a very small percentage of the whole.

Iodides.—The glands had not reached the stage of gross caseation in 64 cases, and these were given syrup. ferri iod. (B.P.) in full doses over periods ranging from two months to three years, those reacting favourably being afterwards kept under observation for at least one year. It was found that complete clinical disappearance occurred in only 4 patients, and then in glands which had never progressed beyond the earliest stage of lymphoid enlargement. It appears that complete resolution is seldom, if ever, attained under this treatment, and that the optimum result to be hoped for is defined by shrinkage, mobility, and firmness, indicating progressive fibrosis and showing later to X ray the dense shadows of calcium deposition. This must constitute a "cure," so far as that term may be applied to any tuberculous focus. The continued presence of living tubercle bacilli in such latent foci, even when encapsulated by calcification, has been abundantly demonstrated by Opie [12] and others, but the likelihood of exacerbation becomes progressively less with time and may be anticipated by prolonged and careful observation.

In order to study the results of this group in detail, a classification of the disease according to its clinical stages, modifying that of Mest,[5] has been found convenient:—

1. Glands enlarged, firm, mobile, and not matted.
2. Peri-adenitis, with matting but no gross softening.
3. Liquefaction with fluctuation; no reddening of the overlying skin.
4. Skin thin, reddened; ulceration inevitable.
5. Sinus.

In the present group 34 cases were at Stage I. when treatment was begun. The glands in 4 patients disappeared, in 19 became permanently small and shotty, and in 11 remained stationary in size; that is, a satisfactory result was obtained in all. Of 30 cases in Stage II. with associated peri-adenitis, 18 became "cured" and 12 went on to softening and abscess-formation.

The part played by iodine in this series is questionable, as improvement in some may have been spontaneous or due to some other factor, but the fact that not one of the early stage cases became worse while under treatment suggests that its value is not inconsiderable.

Tuberculin.—A standard preparation of old tuberculin was given to 42 cases by subcutaneous injection over periods of from two months to three years. Of these 4 were at Stage I. and 28 at Stage II., and in all a "cure" was obtained as defined above. The remaining 10 patients showed gross signs of softening prior to commencement of treatment, and all eventually broke down or were incised. This bears out the general opinion [3] that tuberculin is not likely to arrest a tuberculous process once extensive liquefaction has occurred. On the other hand, the results when treatment was begun in the stage of peri-adenitis without softening compare strikingly with those obtained by iodides (100 as against 60 per cent.), and in view of this virtual control series, argue strongly in favour of tuberculin.

Surgical excision.—Radical removal of tuberculous cervical glands had been attempted by a surgeon in 36 patients. In 25 of these there was a gross local recurrence of the disease; 1 patient developed phthisis and 1 a fatal generalised tuberculosis. Operation may therefore be said to have cured certainly not more than 25 per cent. Of the 35 surviving patients in this series, operation was followed in 13 by a persistent sinus. This is noted in relation to the argument often advanced in favour of surgical excision [1 3 4 11 13] that it anticipates the formation of a spontaneous fistula. In order to assess its ultimate cosmetic results, a control series was collected of 35 successive cases in which tuberculous cervical glands broke down spontaneously, owing to refusal or neglect of treatment in the earlier stages. The healed scars in both groups compare as follows:—

	Surgical excision.	Spontaneous ulceration.
Good	8	8
Moderate	15	12
Bad	12	15

These figures suggest that the cosmetic results of surgical excision are not significantly better than

those of untreated cases which run a severe course under the least favourable conditions.

Aspiration.—Liquefaction occurred in 32 patients, and these were treated by aspiration, using the oblique approach of Calot.[1] Of these, 4 remained "closed" and subsequently subsided under iodide administration; in them a single aspiration sufficed and the cavity did not refill. In the remaining 28 patients a sinus ultimately formed along the needle-track. This was found to occur more frequently when rapid refilling took place, requiring repeated aspiration, and when the onset of softening had been acute, suggesting a superadded secondary infection. The injection of antiseptic and sclerosing solutions into the abscess cavity seemed rather to provoke sinus-formation than otherwise.

Incision.—Incision with drainage was performed in 70 cases. The cosmetic results were slightly inferior to those obtained by aspiration, but both compare very favourably with the results of surgical excision and spontaneous ulceration:—

	Excision.	Spontaneous ulceration.	Aspiration.	Incision.
Cases ..	35	35	32	70
	Per cent.			
Good ..	23	23	37	37
Moderate ..	43	34	47	40
Bad ..	34	43	16	23

Of 16 patients giving "bad" scars, 15 were incised at Stage IV. with the skin thin and reddened, while of 26 giving "good" scars 14 were at Stage III. only. This suggests that to obtain the best cosmetic results the incision should be made through healthy skin, and should not be delayed until this has become involved in the tuberculous process; this is contrary to the practice of Miller [11] who allows softening to reach an advanced stage. Incision was followed in 12 patients by curettage of the abscess cavity. This did not appear to affect either the subsequent course of the disease or the ultimate cicatrix, and the percentage results were approximately the same as those obtained by simple incision. It is suggested that softening of a tuberculous gland and formation of "cold abscess" is not necessarily to be regarded as a catastrophe, but may on the contrary give a reasonably good result.

CONCLUSION

In the light of the foregoing observations of fact, I now adopt the following routine:—

1. When tuberculous cervical adenitis is in the earliest stage of simple hyperplasia, syrup. ferri iod. (B.P.) is given by mouth until the glands are permanently firm and contracted.

2. In the next stage of peri-adenitis, Beraneck's tuberculin is given by injection, according to the usual straightforward technique.

3. When there is enough softening to give physical signs of fluctuation, one of two surgical measures is adopted. If there is reason to believe that the process of liquefaction is slow, owing to its insidious onset and slow rate of increase, aspiration is performed: if, on the other hand, the abscess appears suddenly in a hitherto firm glandular mass, an early incision is made; this is also done in a patient, seen for the first time with the skin already involved in the tuberculous process, as evinced by its being thinned and reddened. The old-fashioned Syme's "abscess knife" is preferred for this purpose. Free drainage is maintained until all discharge has ceased.

4. Whenever a sinus has formed, or has been produced by aspiration or incision, any residual glands receive conservative treatment according to their condition, on the lines indicated above. It has been observed that obstinate fistulæ do well on tuberculin. Scrofuloderma is treated by ultra-violet irradiation.

5. Apparent cure is succeeded in all cases by observation for at least three years. Relapse and recurrence are not uncommon, but are equally amenable to the same methods of treatment. The average duration of iodide treatment is from 9–15 months, and of tuberculin from 3–6 months. An adequate supply of food and clothing is supplied through the care committee and home supervision is carried out by health visitors. Only in rare cases of grossly deficient home conditions is sanatorium treatment resorted to, or when the disease is accompanied by severe toxæmia or active tuberculosis in some other part of the body. Surgical excision is held to be unjustified by results and is never advised.

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Clinical and Laboratory Notes

THE SPECTOGRAPHIC ANOMALIES OF GASTRIC JUICE IN PERNICIOUS ANÆMIA

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Castle, Wilkinson and Klein, Cohn, Witts, Muelengracht, Gänsslen, Bence and others have drawn attention to the special rôle of the stomach in regenerating the blood in pernicious anæmia. This note records some observations I have made with Miss Hanák on the contents of the fasting stomach removed through a duodenal tube and examined by ultra-violet spectrographic tests. These contents prove to have a selective absorption spectrum, which is also shown by the ultrafiltrate of the juice. Further we found evidence that the substances producing this appearance in the spectrum are actively secreted in the stomach.

Absorption spectra of samples of the juice of the fasting stomach before an alcoholic test-meal and

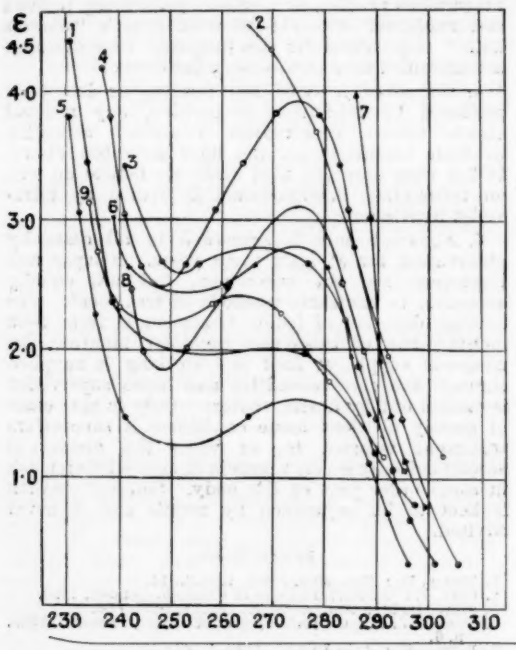
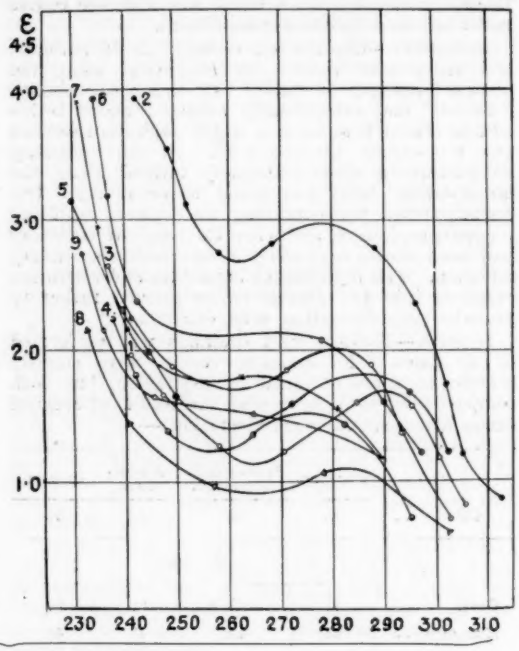


FIG. 1.—Control group: (1) diabetes mellitus; (2) chronic nephritis; (3) subacute endocarditis; (4) cardiac cirrhosis; (5) hepatic cirrhosis; (6) renal tuberculosis; (7) diabetes mellitus; (8) neurasthenia; (9) chorea minor.



Spectrum wave-length in mμ.

FIG. 2.—Extinction coefficients in pernicious anæmia: 9 cases.

then at 10-minute intervals show that the meal at first lowers the extinction coefficient (see ε in Figures) by dilution, but further fractions show a slight rise in the curves associated with the increased activity of the stomach.

After this, with J. Várady and F. Császár, I carried out tests on ultrafiltrates of the juice from fasting stomach in three groups of patients. The first consisted of those suffering from a variety of diseases (Fig. 1); the second, from hypo-acidity, including cancer of the stomach; and the third, from pernicious anæmia, and already treated with liver (Fig. 2). We found that the absorption curves of the patients suffering from pernicious anæmia were remarkably like those in the other groups. The group of gastric disturbances and the control group showed a scattering of extinction coefficient values with a low limit of 2·0 and only in exceptional cases did these groups show a coefficient lower than this. In contrast to these the ultrafiltrates of the gastric juice in pernicious anæmia showed groups with a lower level, and the extinction coefficient values were between 1 and 2.

I have since attempted to discover the substance which develops the selective action in the fasting stomach contents. It has been shown by chemical and also by spectrographic tests that these substances are not proteins, polipeptides, aromatic amino-acids, lactic acid, or bile-pigments. The results of my investigations strongly suggest that, from their physico-optical and physico-chemical properties, and also from their reactions to heat, acids, and alkalis, their solubility, and their power of absorption, these selective secretions of the stomach are due to a vitamin-B complex substance.

We hope that these researches may be valuable in helping us to discover the pathogenic factor of pernicious anæmia.

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TUBERCULOUS THROMBOPHLEBITIS OF THE LOWER EXTREMITY

By Emil Altschüler

LATE SENIOR SURGEON OF THE JEWISH HOSPITAL, FRANKFORT-ON-MAINE

As far as I know, isolated tuberculous disease of veins, especially in the lower extremity, has not yet been described. I therefore consider it important to record two cases that I had occasion to observe while in Frankfort.

Case 1.—A gardener aged 28. His father had died of pulmonary tuberculosis and his mother of asthma. He himself had suffered from several childhood illnesses and had been operated on for appendicitis.

In June, 1932, he had pain in the right leg. Painful cords appeared and he lay several weeks in the surgical wards of the University hospital. He left completely cured. When in October, 1932, the pains recurred he came under my care. Several thin cords 10–20 cm. long were found on the right leg and thigh; these were very

tender on the slightest pressure. He was otherwise healthy; X ray examination showed the lungs to be normal. The temperature was also normal and the Wassermann reaction was negative. I was struck by the absence of pyrexia and still more by the extraordinary multiple thin cords. They were about as thick as a knitting-needle and were very similar to those found in chronic inflammation of the lymphatic vessels. I suspected a specific disease of the veins and had an inflamed cord removed.

The pathological examination was made by Prof. Fischer-Wasels, director of the pathological institute of the University, and he reported that after examining numerous serial sections, several typical tubercles were found in the thickened and abundant intima of the veins.

Some time later the same symptoms recurred on the left lower leg. Being a public officer he was no longer allowed to be treated in a Jewish hospital and he therefore entered the surgical department of the University clinic. At my instance a diseased part of vein was removed for examination, and this also showed tuberculosis of the vein.

CASE 2.—A merchant aged 36. The family anamnesis was normal. He said he had had catarrh of the lung apex during his military service. A few years ago he was operated on for appendicitis. From July 20th, 1934, until August 2nd, 1934, he was in our hospital suffering from thrombophlebitis in the region of the saphenous vein. A thick painful cord stretched from the lower leg to the middle of the upper thigh, behind the knee. There was no raised temperature. The symptoms disappeared rapidly after treatment with leeches. On Oct. 10th he was again admitted because of the repeated thrombophlebitis in the same region. His organs were healthy and X ray examination showed the lungs to be normal. The surprising result of the examination in Case 1 led me to extract the diseased part of the saphenous vein and to send it to Prof. Fischer-Wasels. The microscopic examination showed a lumen completely filled with masses of thrombus, for the most part caseous. In the intima there were epithelioid cells and some quite typical tubercles.

In both cases I removed the inguinal glands and had them examined, but they were not diseased. The tissues in the neighbourhood of the diseased veins were also normal and the wounds healed by first intention.

Tuberculosis of veins has been described. Weigert published several cases with infection of the pulmonary vein, but there have been only a few with the thyroid, suprarenal, portal, azygos, or splenic veins affected. In all these, however, it was not a matter of a disease confined to the vein wall; the vein was infected by invasion from the surrounding tissues and there were always advanced tuberculous changes, with miliary infection of the viscera. In both our cases the organs are not demonstrably diseased. The tissue surrounding the vein was free from infection and only the intima was attacked. I cannot explain the ætiology; no portal of entry was discovered in the lower leg in spite of most exact interrogation of the patient.

I am no longer in a position, for want of material, to continue these examinations. I think that tuberculous disease of the veins of the extremities is not rare, and if this is so there is a wide field for research into its causes and its treatment.

Tel-Aviv, Palestine.

TOXIC PURPURA HÆMORRHAGICA COMPLICATING SCARLET FEVER

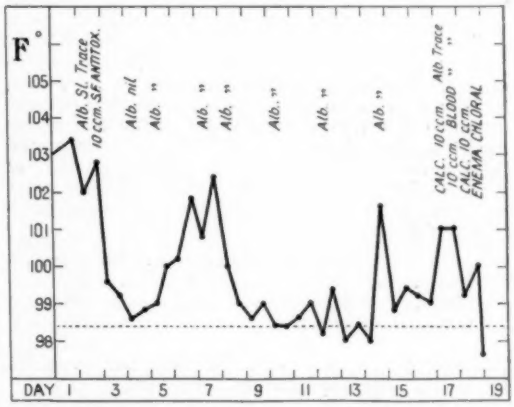
BY J. E. MORRISH, L.M.S.S.A. Lond.

A GIRL, aged 7, was admitted to the Harrow Isolation Hospital suffering from scarlet fever.

On admission she had a brilliant erythema and a strawberry tongue; temperature 103·4° F.; pulse-rate 140. Scarlet fever antitoxin (10 c.cm.) was injected, and apart from a trace of albumin in the urine on the second day she progressed without further complication until the eleventh day, when there was some pyrexia.

On the morning of the thirteenth day the night nurse discovered a small hæmatoma on the right hip which rapidly increased from the size of a penny to a circle of about 4 in. diameter. Both feet became bluish and painful in the sock area; the right eye showed conjunctival hæmorrhage and the temperature (see Chart) rose to 101° F.; pulse-rate 128, respiration 20. There were no adventitious heart sounds.

Calcium Sandoz (10 c.cm.) was injected intramuscularly and calcium lactate grs. 15 was given orally every four hours in a potassium citrate mixture. During the day the temperature dropped to 99° F. but the pulse-rate remained rapid. Other purpuric rashes appeared on the right knee and on the whole of the right thigh; both feet and ankles were swollen and dark purple in colour with



Temperature chart. Alb. sl. trace = albumin slight trace. S.F. antitox. = scarlet fever antitoxin. Calc. = Calcium Sandoz.

petechial spots showing through, causing the girl to cry with pain.

At 10.30 P.M. 10 c.cm. of the father's blood was withdrawn and injected into the child's buttock, and a draught of bromide and chloral was given to induce sleep and relieve pain. Next morning the child was obviously anæmic and there were hæmorrhages from the gums and nose. Both feet were now almost black and anæsthetic, but there seemed to be a ring of reaction around the edges of the smaller patches. Albumin had appeared in large quantities in the urine. The heart had a definite tic-tac rhythm; pulse-rate 160, temperature 100° F. She complained of abdominal pain, probably due to intestinal hæmorrhages; palpation was difficult, however, owing to rigidity, but no enlargement of the spleen could be felt.

Another 10 c.cm. of calcium sandoz was given intramuscularly. Dr. Robert Hutchison advised the further injection of serum into the buttock, as the veins were so collapsed that it was impossible to get into them. An enema was given late that night and grs. 10 of chloral was left in the rectum, following a bout of violent abdominal pain and sickness. The temperature dropped to 99·8° F. and she died at 3.45 A.M. From the onset of the purpura to death occupied about 48 hours.

I think I am right in saying that this case is unusual. Most authorities, with a few exceptions, describe these fatal cases attended with hæmorrhage as occurring in the first few days of scarlet fever, and not as late as the fourteenth day. The complete failure of treatment, even after two injections of serum, is noteworthy. Could it be that the serum activated the symptoms rather than controlled them?

MEDICAL SOCIETIES

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION

AT the annual meeting of this association, held at the rooms of the Medical Society of London on April 17th, with Dr. J. LAMBERT (Wellington College), the president, in the chair, a discussion took place on

Administrative Difficulties in the Construction of a School Sanatorium

Dr. R. E. SMITH (Rugby School) said in building a new sanatorium the governing body had to consider not only the site and the cost, but also problems which arose in consultation with the selected architect. The latter should have had a wide experience of hospital construction, and this of itself was some guarantee that money would not be wasted. The Royal Institute of British Architects, in regard to competitive buildings, discouraged the award of the work automatically to the one whose tender was lowest, and a Fellow of that body would listen to constructive suggestions. Rugby School had a population of 600, and the number of days spent by boys in the sanatorium in three successive years was as follows:—

	Spring term.	Summer term.	Winter term.
1933	2762	897	858
1934	2340	925	1421
1935	1486	1508	884

The average population in the sanatorium was 30, 12, and 12 respectively in the three terms.

The position of the site depended to some extent on whether all cases were to be dealt with in one building. In some schools infectious cases were housed in a separate building, but the modern tendency was to have all departments under one roof, when medical and nursing attention was more efficient. Dr. Smith had never seen an infection transmitted from an in-patient to an out-patient. A sanatorium in a central situation was visited more readily by boys than one at a distance, and also more convenient for housemasters. The number of beds in a sanatorium depended on many factors, discussed by Sir Weldon Dalrymple-Champneys in 1928. Less than the proportion formerly recommended (10 to 20 beds for each hundred boys) was now being advised by medical experts. Preparatory schools, where the number rendered immune by a previous attack of acute infectious diseases was relatively low, would need a higher proportion of beds than schools for older boys. Measles could now be controlled by convalescent serum therapy; at boarding schools this disease showed a biennial periodicity if attempts were not made to prevent contacts from returning. Diphtheria was the one disease against which prophylaxis was almost perfect; it had a low incidence in residential schools. Scarlet fever was troublesome, as patients had to be subjected to a long quarantine. Four weeks had been shown to be a better quarantine period than six weeks. The best policy, however, was active immunisation. Dr. Smith's view was that 10 beds for each 100 boys sufficed for a school sanatorium, provided each house in the school had in addition one sick room for every 30 boys. He was strongly in favour of a number of single-bed wards; two-bed wards he regarded as useless. Moreover, cases of measles were far better nursed in single rooms than in large wards, though they should be transferred during convalescence. Only in this way could droplet infection be reduced to a minimum, and such serious complications as pneumonia, otitis media, and mastoiditis be avoided. The cubic capacity of the single-bed wards need not exceed 1500 ft., especially in the presence of adequate cross-ventilation. Possibly school sanatoria erected in the future would be equipped with air-conditioning plants. As to windows, his own preference was the double-sash window with metal chain sash cords. A fanlight above the door facilitated cross-ventilation. The public at large still needed convincing of the great value of the open window in pyrexial illnesses so long as the patient was kept warm.

The provision of facilities for operating in public schools was useful and might assist schools to secure the right type of men as health officers, though admittedly some conditions were best dealt with in a general hospital. For sterilising purposes Dr. Smith preferred electricity. The provision of sufficient recreation rooms was most important, as the management of boys during convalescence taxed the medical resources of the doctor as much as did the acute phase of their illness. Large wards should have coal fires in them and a varied library. Every effort should be made to reduce noise to a minimum.

Mr. LIONEL PEARSON, F.R.I.B.A., showed pictures of the new Masonic sanatorium for girls at Rickmansworth, designed by Mr. Denman, which was held to be one of the best sanatoriums in the country. Many of the points made by Dr. Smith were insisted upon in the Ministry of Health memorandum, but the school sanatorium presented rather a different problem when infectious disease and cases of ordinary illness were treated in the same building. Mr. Pearson had reason to believe that there was a strong desire among medical men for the provision of cubicles for cases of infectious diseases, one reason for this being that the length of stay of the patient was thereby shortened. It had been said on good authority that there were only two ways of dealing with children in hospitals: to segregate them into cubicles, or to insist on their wearing masks to prevent the spread of infection. He shared Dr. Smith's disapproval of two-bedded wards, though something could be said for them from the social standpoint of avoiding tedium. His own view was that the difficulty was best overcome by having cubicles with glass divisions, as supervision was very important. As to cubic capacity, it was no longer considered essential to provide 1500 cubic feet space for each acute case. The important point was floor space; for a single patient in a cubicle the floor space should be 12 by 10 ft., and in open wards 10 by 10 ft. per patient. Similarly a height of 15 ft. was no longer demanded, as nothing over 10 ft. from the floor apparently made any difference. A distance of at least 8 ft. between the centres of adjacent beds was important in order that infection should not be conveyed by coughing. A schoolmaster told him he had materially reduced the incidence of illness by forbidding coughing in class-rooms; boys with the urge to cough had to leave the class. If screens were objected to, the barrier system of preventing spread of infection could be adopted. As to fittings, sash windows tended to rattle in a wind and disturb sleep; casement windows were much more popular with matrons and nurses. He asked whether cross-ventilation was essential if plenty of air was entering the ward. In

side-lighted rooms fanlights over the doors would provide sufficient air currents. Air-conditioning he did not particularly favour; it must include filtering and washing the air, and unless the school was situated in a slum area there would be ample direct contact with the outside air. For heating he preferred radiators under the windows, but, despite the trouble of stoking and cleaning, open fires were good and cheering in a ward.

Dr. G. E. FRIEND (Christ's Hospital) said that occasionally he had to cope with a considerable number of sick boys, and in the presence of mixed epidemics it was necessary to convert one of the school houses into a hospital. Hopper windows were put in and proved satisfactory; the time of convalescence was reduced by 25 per cent. in the improvised building thus fitted, compared with the infirmary building. He thought the variations of hospital design in different countries might be largely dictated by the average amount of sunshine.

Dr. W. G. WILLOUGHBY (Eastbourne) said that in the infectious diseases hospital with separate blocks there was no difficulty about having the windows open in summer; the difficulty arose in winter, especially when cross-ventilation existed. In blocks built in 1902 open fires were provided; air coming in was heated by the fire and distributed throughout the ward without draughts. He referred to the grave illness and mortality statistics in inhabitants of back-to-back houses, due mainly to the lack of through ventilation. It was important to employ an architect with special experience.

Dr. L. R. LEMPRIERE (Haileybury) endorsed the praise given to the design of the Rickmansworth Hospital. He was opposed to the provision of an operating theatre in school sanatoria. Most public schools were conveniently near a well-equipped and well-staffed provincial hospital, and it was very much better, in his opinion, that operation cases should be dealt with there. He did not think that any school medical officer could be expected to be operating surgeon to the school, since his hand could easily lose its cunning when few operations were required. He was against coal fires in wards, quite apart from the dirt and the trouble of keeping them going. They failed to maintain an equable temperature, and schools catered not only for infectious cases, but for acute cases and convalescents. As soon as he was fit, the boy should be put down in the recreation room, a provision which most school architects ignored. An objection to large windows was that the blinding sun on a hot day could not be properly shut out. The amount of sunlight reaching patients in the summer could be overdone; it might interfere with sleep. The perfect flooring for a sanatorium had not yet been achieved, but the nearest approach, he thought, was cork. He agreed with the objection to two-bedded wards; a public school sick house could possibly be a starting-point of immorality. A vital necessity was the provision of a detention room. Sick boys who might be incubating an infectious disease must not be mixed with convalescents. He would like to see every sanatorium equipped with a dark room, for transillumination aids to diagnosis. The provision of a parents' room was desirable.

Mr. DENMAN, F.R.I.B.A., spoke of the modifications made from reasons of economy of his original design for the Rickmansworth sanatorium.

Mr. H. M. FAIRWEATHER, F.R.I.B.A., did not think there would be agreement as to the best kind of window; he would be sorry to feel that metal windows only were to be used for hospitals and sanatoria. The chief inquiry made by parents concerning a school was about the provision made for caring for them when sick.

The PRESIDENT expressed his leaning towards single cubicles and separate rooms for school sanatoria. At the beginning of a school term a number of boys had a temperature and the uncertainty as to what would develop made a particular need for single cubicles. School sanatoria should have sufficient single cubicles, and sufficient three- or four-bedded rooms.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

A MEETING of this society was held in Liverpool on March 20th, with Dr. RUTH NICHOLSON, the president, in the chair. Two cases of

Simmonds's Disease

were reported by Mr. J. ST. GEORGE WILSON. He said that this syndrome, which is commoner in women, was first described in 1914, and is typified by progressive loss of weight and senile changes—such as loss of hair, an aged appearance, inhibition of genital function, and amenorrhœa. Lassitude and weakness are conspicuous. The basal metabolism is much lowered and the pulse is slow. There is anæmia and there may be hypoglycæmia. Radiologically there may be enlargement of the sella turcica if the lesion is a neoplastic destruction of the pituitary.

The first patient, aged 29, had complained of loss of weight, following a normal confinement; her weight, previously 11 st. 7 lb., had been reduced to 5 st. 11 lb. within four years. There had been daily vomiting, dizziness, and loss of power in the left hand. She had, however, no loss of hair and did not look prematurely aged. She had complained of amenorrhœa for the last 12 months, her periods having previously been irregular. On examination she was found to be poorly nourished. The blood pressure was 114/72 mm. Hg and the pulse-rate 44. The cervix was multiparous and the body of the uterus small. X ray photographs of the skull revealed no abnormality. The blood-sugar was 81 mg. per 100 c.cm., non-protein nitrogen 33 mg., Wassermann negative. She was treated with injections of insulin and Pregnyl and with extra salt in the diet.

The second patient, aged 37, also dated her symptoms to a confinement. She had complained of loss of weight for 21 months, nausea for 20 months, and weakness for 6 months. She was stated to be looking much older than previously, and had had amenorrhœa for 28 months. On examination her weight was found to be 4 st. 10 lb. She had hair on the face, pigmentation of the abdomen, a blood pressure of 98 mm. Hg, and a pulse-rate of 42. The urine was normal and a radiogram of the skull revealed no abnormality. She had complained of amenorrhœa constantly for the last 12 months, having previously had scanty periods at intervals of 5–6 months. On pelvic examination the uterus was found to be senile. She was treated by injections of Antuitrin S and Œstroform and was given olive oil. Eight months later she had gained 3 st. in weight.

In the discussion, Mr. S. B. HERD commented on the fact that in each patient the condition had closely followed pregnancy. He wondered if in the past these cases had merely been considered as instances of superinvolution.—Mr. T. N. A. JEFFCOATE said he considered superinvolution of the uterus always to be due to pituitary disease. He also questioned whether there was not in Simmonds's disease an element of suprarenal dysfunction as well.—Dr. E. A.

GERRARD referred to the relationship between super-involution and prolonged suckling. He did not agree that it necessarily meant a diseased pituitary.—Mr. F. E. STABLER asked if an Aschheim-Zondek test had been performed: he had seen a case of the condition in which it was slightly positive.—Mr. ST. GEORGE WILSON said that such a test had not been done, but he would certainly have one carried out.

Mr. C. MCINTOSH MARSHALL described two cases of

Uterine Rupture Associated with Placenta Prævia

In the first the rupture was spontaneous and in the second it was traumatic.

The first patient was a 4-para aged 29. She was admitted to hospital, believing herself in labour, but the pains passed off. The pregnancy, according to the usual calculations, was at the forty-second week, the presentation was right occipito-posterior and the head high above the brim. Vaginal examination a week later revealed a lateral placenta prævia, the os admitting one finger. After a further week, pains began spontaneously and after nine hours in labour some blood and clots were suddenly passed from the vagina. Vaginal examination showed that the cervix, though not too well taken up, admitted two fingers and that the membranes were ruptured. The os was partially covered by the placenta which was on the posterior wall of the lower segment. The child's head was macerated and there was much overlapping of the parietal bones, the anterior over the posterior. Willett's forceps was applied to the scalp and a weight of 1 lb. attached. No further bleeding occurred. Four hours later the child, which weighed 5 lb. 11 oz., was delivered. It was macerated and had an offensive odour. No bleeding followed the birth of the child, but an hour later the patient's condition had deteriorated, she was pale, and her pulse was rapid and soft. The placenta had not been delivered. Morphia and a saline were given and the foot of the bed was raised. During the next few hours her condition improved a little and four hours after delivery it was decided to remove the placenta. As soon as anæsthesia had been induced a blood transfusion was commenced, and on passing the hand into the uterus a laceration was discovered in the lower segment. The abdomen was rapidly prepared and a laparotomy carried out on the labour bed. A large amount of free blood was found in the peritoneal cavity, also the placenta. There was a vertical tear 3–4 inches in length in the posterior wall of the lower segment and cervix. Subtotal hysterectomy was performed and a drainage-tube inserted. Convalescence was stormy, but eventually the patient made an excellent recovery.

Mr. Marshall referred to a case reported by H. D. de Sa in which spontaneous rupture of the uterus had also occurred through the placental site.

The second case was a primipara, aged 22, who was six days over her expected date, the head being still above the brim. A stomach-tube induction was carried out by an experienced house surgeon. A general anæsthetic was not employed, but the tube was passed under direct vision, a speculum being used and the anterior lip of the cervix grasped with a sponge forceps. When about 2 inches of the tube had been inserted some resistance was met with, but was easily overcome and the rest of the tube was inserted without difficulty. Pains commenced 5 hours later, and after a further 10 hours the cervix was almost fully dilated, the head however being still above the brim. The stomach-tube had not been extruded. A catheter being passed, the urine was found to be heavily stained with blood. Mr. Marshall was then called to see the case and on cystoscopy the stomach-tube, which had been palpated through the anterior vaginal wall, was clearly seen in the bladder. Delivery of a living child was effected by version and extraction, and the placenta, which was inserted low on the anterior uterine wall, was removed manually. It was noted that its lower edge was about 1 inch from the cervical lip. A median suprapubic incision was made, and the uterovesical pouch of peritoneum was inspected. No injury was seen. The peritoneum was then closed and suprapubic cystotomy was carried out and the tube removed. The bladder was drained. Cystoscopic examination a month later revealed a small slightly raised puckered area lying behind the base of the bladder. This had a similar appearance to the cystotomy scar in the fundus.

Mr. ST. GEORGE WILSON expressed a doubt whether, in the second case, the stomach-tube had passed through the placental site. He was inclined to think that it had been forced through the wall of the cervix.—Mr. STABLER held that the first case could hardly be considered as one of spontaneous rupture, since Willett's forceps had been applied. Regarding the second case, he felt that a tube should never be passed without general anæsthesia. Apart from the difficulty which might be experienced, it was impossible otherwise to ensure an adequate aseptic technique.—Dr. GERRARD supported the latter observation and spoke of the morbidity associated with bougie induction.—Mr. C. H. WALSH questioned whether true spontaneous rupture of the uterus ever occurred. It was interesting to note that all cases reported had been in multiparæ, and the suggestion was that trauma at a previous confinement was really the ætiological factor.

In reply, Mr. MARSHALL said that he felt sure that the tube had not perforated the cervix but had been deflected by the edge of the placenta and had passed through the placental site. He also referred to blood transfusion as a most valuable and life-saving measure in cases of placenta prævia.

Renal Calculi in Pregnancy

Mr. WALSH said it had been noted that kidney stones were rare in pregnancy, this being accounted for by the fact that renal lithiasis occurs as a rule in women between the ages of 30 and 50, and most pregnancies before 35. The condition presented many interesting features regarding diagnosis, the value of biochemical tests as a guide to treatment and prognosis, and the particular line of treatment to be decided upon. A further point of interest was the ureteric dilatation normal in pregnancy.

He had seen three cases of renal lithiasis in pregnancy during the latter half of 1935.

The first patient, a 3-gravida aged 36, was seen at the fourteenth week. She had complained of pain in the left loin for two years, worse recently. The urine contained blood and *Bacillus coli*, but no casts were present. The blood pressure was 120/75 and the blood non-protein nitrogen 33 mg. per 100 c.cm. Radiography revealed two stones in the left kidney. Nephrolithotomy was decided upon in consultation with Mr. J. C. Ross, who removed the calculi. Convalescence was uneventful and the patient, whose urine became clear ten weeks after the operation and remained so, was delivered at term of a child weighing 7 lb. 12 oz.

The second patient, a 3-gravida aged 30, was first seen at the twentieth week of pregnancy. She then had albuminuria but the blood pressure was 120/75 mm. Hg. She was regarded as a mild case of toxic albuminuria and treated as such, but the albumin increased in amount, and she was admitted for investigation. The output of urine was up to 67 oz. per day and a trace of blood and pus was found, also *B. coli* in moderate amount. The blood non-protein nitrogen was 45 mg. per 100 c.cm., the urea concentration 1·85 per cent. at the third hour. She improved with rest and dieting, and was discharged two weeks later, the urine containing a trace of albumin only. She was readmitted at the thirty-sixth week with severe œdema and albuminuria, and, having slight hydramnios, she was radiographed. A large branched calculus was apparent in the right kidney. Mainly on account of the

hydramnios and œdema it was decided to induce labour at the thirty-eighth week. The labour and puerperium were normal. Three months later, after further renal investigation had revealed a functionless right kidney, nephrectomy was performed.

The third patient, a primigravida aged 20, was admitted at the twentieth week. She was acutely ill and had symptoms simulating acute appendicitis, though the urine contained some albumin and pus. An incision was made in the right iliac fossa, and an extraperitoneal abscess was found. Because the condition might have been a retro-cæcal appendix, it was felt necessary to open the peritoneal cavity. This was done after careful packing off but the appendix was found to be normal. The extraperitoneal tissues were drained and the wound partially closed. The wound drained freely and the acute symptoms settled at once. The pus contained *B. coli* and non-hæmolytic streptococci. Radiography ten days later revealed a large calculus in the right kidney. Blood non-protein nitrogen was 32 mg. per 100 c.cm., the urea concentration 1·95 per cent. at the end of three hours. The wound had completely healed in six weeks, and though the surgeon was anxious for the pregnancy to be terminated so that the kidney condition could be treated, Mr. Walsh decided not to interfere. She was kept under observation week by week, during which time her general health remained extremely good, went into labour at the thirty-eighth week, and was delivered by natural forces of a child weighing 5 lb. 4 oz. The puerperium was uneventful and she was discharged on the twelfth day.

Mr. Walsh remarked that only in the first case was it possible to suspect a renal calculus on the history, and in view of this, it seemed likely that renal stones were not infrequently missed. The second patient had been operated upon for chronic appendicitis and had been treated for toxic albuminuria before radiography on account of hydramnios revealed the true state of affairs. Regarding the investigations which are usually undertaken, he inquired if there was any biochemical test which would serve as a guide to prognosis and treatment in renal pathological conditions during pregnancy. After an investigation of the blood pressure, blood-urea, and urea concentration of a number of cases of toxic albuminuria, and a correlation with clinical results, he was of the opinion that only the blood-pressure reading was a reliable guide. The urea concentration and blood-urea were much too erratic to give any guide to prognosis. This applied particularly to toxic albuminuria, but it was not out of place in discussing renal calculi.

Ureteric dilatation during pregnancy was evident on the sound side in each of the three cases, and was demonstrated by injection of Uroselectan and radiograms. This was a normal state of affairs during pregnancy, and had originally been attributed to pressure on the ureters at the pelvic brim by the pregnant uterus. There seemed little doubt in view of recent work that this theory was quite wrong and that the true explanation lay in an altered endocrine function present in pregnancy and affecting all involuntary muscle, acting either directly or in conjunction with the sympathetic nervous system.

On the question of treatment of diseased organs complicating pregnancy, Mr. Walsh thought there was a widespread tendency towards terminating the pregnancy as a preliminary to surgical treatment. He considered this attitude to be entirely wrong and felt that, speaking generally, even severe surgical conditions could be treated with little risk of interrupting the pregnancy. Applying these principles to the three cases under review, he considered that the first case was correctly treated by nephrolithotomy at the fourteenth week. In the second the renal lithiasis was not diagnosed until the thirty-sixth week, and there was thus little to be gained and much to lose by operation at that time; in the circumstances induction of labour at the thirty-eighth week appeared to be rational. Looking back on the third case, he felt that nephrectomy at the twenty-fourth week was the method of choice, despite the fact that, as things turned out, conservative treatment resulted in a live birth, leaving a diseased infected kidney to be removed later.

He summarised his conclusions as follows: (1) the diagnosis of kidney stone is difficult and liable to be mistaken for conditions peculiar to pregnancy; (2) in reading radiograms during pregnancy after intravenous injection of uroselectan, it should be remembered that there is normally a state of ureteric dilatation; (3) urinary and blood biochemical tests are of no help in prognosis or as a guide to treatment; and (4) the guiding principle to treatment should be to remove the stones or kidney and ignore the pregnancy.

Mr. J. W. BURNS agreed that the biochemical tests were of no value, and was pleased to hear that Mr. Walsh had the courage of his convictions. He felt that the blood pressure was more useful as a guide to treatment in albuminuria.

Mr. P. MALPAS could not agree with the previous speakers, and thought that the non-protein nitrogen index had a certain value in eclampsia, especially if taken together with other findings and the clinical condition of the patient. If there was gross liver damage, the index might not be grossly increased, although the patient was gravely ill. He referred to six patients whom he had recently come across suffering from renal calculi.

Mr. A. A. GEMMELL supported Mr. Malpas and attached some value to renal efficiency tests during pregnancy. These were useful if fitted in with the clinical condition. He had found the blood-urea and the urea-concentration tests improved in cases where the fœtus died in utero.

Mr. C. J. K. HAMILTON referred to a patient of his own with renal calculi who gave an 8-year history of hæmaturia. There was a large branched calculus in the left kidney. Pregnancy was allowed to continue until the thirty-eighth week when induction was carried out for disproportion. The hæmaturia disappeared after delivery.

Mr. MARSHALL thought that the liver damage vitiated the blood non-protein nitrogen index and referred to a case in which he decapsulated the kidneys because of the clinical condition of the patient, although the index was under 40 mg. per 100 c.cm.

Mr. JEFFCOATE gave a demonstration of a suction curette which could be used as a diagnostic aid, particularly in cases of endocrine dysfunction; an important feature was that an anæsthetic was not required.—Mr. C. HENDERSON showed a specimen of a pregnant uterus and vesical calculi with bilateral pyonephrosis.

OPHTHALMIA NEONATORUM: TECHNIQUE OF IRRIGATION.—Mr. J. D. Magor Cardell, whose opening paper in a discussion at the Ophthalmological Society of the United Kingdom was reported on p. 842 of our issue of April 11th, writes to correct the impression given that the cornea should deliberately be massaged during irrigation. The actual words he used are these: "While the irrigating stream is still flowing, one finger of each nurse is gently drawing the lids apart without pressure on the globe, and at the same time travelling to and fro across the lid. This delicate massage avoids the cornea and coaxes pus out of the fornices."

REVIEWS AND NOTICES OF BOOKS

Recent Advances in Dermatology

By W. NOEL GOLDSMITH, M.D. Camb., M.R.C.P. Lond., Physician to St. John's Hospital for Diseases of the Skin; Assistant Physician to the Skin Department, University College Hospital. London: J. and A. Churchill Ltd. 1936. Pp. 522. 18*s*.

THIS book is not merely a catalogue of advances in post-war dermatology. It is a notable attempt to tell a connected story, and although largely academic in substance and style, contains much that is practical and explanatory of the trend of thought in a subject that has become complex in the field of medicine. One must admire Dr. Goldsmith's acquaintance with the literature, and the discrimination that marks his selections from the immense amount of published matter he has obviously had to study. Dermatology is no longer a closed circuit. Its practitioners to-day must have at least a nodding acquaintance with the problems of immunology, biochemistry, psychology, and the interactions of the endocrine and sympathetic systems. These are all considered in this work. The author's recommendation to "plough bravely through the chapters in their proper order" will not, we think, be generally followed. For our part we would prefer to take the work in small doses, for it is concentrated stuff. It is satisfactory to note that Lewis's classical studies on the so-called "triple response" have at last achieved a place in dermatology. The chapter on allergy is the least clear, even though a brief glossary of definitions is supplied. To many of us it may appear that the problem of eczema, considered in the light of the allergic response, has not yet been finally solved, and it seems doubtful whether the issue is really as clouded as current theories would suggest.

In other sections of this work Dr. Goldsmith is more practical. That dealing with lupus erythematosus provides sound reasoning and a most useful summary of therapeutic experiences. It is impossible here to comment on more than a few sections of a work which, if rumour is correct, has occupied the author's leisure hours for a period of three years. It seems likely that serious students of dermatology in every country will find this book indispensable.

A Glasgow Manual of Obstetrics

Second edition. By SAMUEL J. CAMERON, M.B., F.R.F.P.S., F.C.O.G., Regius Professor of Midwifery, University of Glasgow; JOHN HEWITT, M.B., Ch.B., F.C.O.G., Hon. Lecturer in Clinical Surgery at the University; ROBERT A. LENNIE, M.D., F.R.F.P.S., F.C.O.G., Obstetric Surgeon to the Royal Maternity and Women's Hospital, Glasgow; and ELLEN D. MORTON, M.B., Ch.B., M.C.O.G., Hull Tutor in Obstetrics at the University. London: Edward Arnold and Co. 1936. Pp. 611. 21*s*.

GLASGOW and its surroundings appear to differ from any other part of the British Isles in the incidence and degree of cases of contraction of the pelvis. One result of this peculiarity is that this book, which provides an account of the teaching of the Glasgow school of obstetrics, devotes far more space to descriptions of varieties of bony deformities and to the management of such cases when pregnancy occurs than do corresponding productions emanating from other centres. The investigation, diagnosis, and treatment of minor degrees of disproportion is described clearly and in great detail. Other chapters which deserve special mention are those on the treatment of antepartum hæmorrhage, on shock, and on puerperal infection. It is interesting to note that in Glasgow the condition of hyperemesis gravidarum is regarded primarily as toxic in origin, whereas in many English schools this variety is believed to be extremely rare. Narcosis in labour is obtained by the use of morphia, scopolamine, and paraldehyde rather than by the barbiturates. We would suggest that half a page is hardly sufficient space to allot to delay in the first stage, one of the most common difficulties experienced in labour. Under the same heading, and presumably considered as a cause, is placed carcinoma of the cervix uteri; nearly three pages are devoted to the treatment of this condition, which must be a rare complication of labour. Cæsarean section (the classical operation) is the method of choice in the treatment of placenta prævia, Willett's forceps being given a mere mention.

Apart from the differences to which we have drawn attention and a few others of minor importance, most English obstetricians would agree with the teaching here set out. The book is easy to read, and the illustrations, especially the photomicrographs, are extremely clear.

Bacterial Endocarditis

By C. BRUCE PERRY, M.D. Brist., M.R.C.P. Lond., Professor of Medicine in the University of Bristol. Bristol: John Wright and Sons Ltd.; London: Simpkin Marshall Ltd. 1936. Pp. 137. 10*s*. 6*d*.

ALTHOUGH there are maladies more consistently fatal than bacterial endocarditis, this disease is generally regarded as one of the most hopeless which affect mankind. So pessimistic is the outlook that interest in this condition centres on its relation to rheumatic endocarditis, and in bacteriological and diagnostic problems, rather than on therapeutics. Prof. Bruce Perry, who has conducted investigations on bacterial endocarditis under the R. L. St. John Harmsworth Memorial Research Fund, has now issued a monograph incorporating this work. The opening chapters are concerned with an exceptionally interesting historical survey in which the evolution of modern knowledge of these diseases is traced from the earliest records over 200 years ago to the present time. In the following section, on bacteriology, Dr. Perry has collected together 1000 cases from various sources in the literature. These show the following ætiological distribution: streptococci (all varieties) 68·1 per cent., staphylococci 10·3 per cent., pneumococci 11·2 per cent., gonococci 4·6 per cent., *B. influenzæ* 2·6 per cent., meningococci and *B. coli* each less than 1 per cent. The relation between rheumatic carditis and bacterial endocarditis is discussed in terms of morbid anatomy and ætiology; Dr. Perry finds that the weight of evidence is in favour of the hypothesis of Von Glahn and Pappenheimer that "the infection of cardiac valves with non-hæmolytic streptococci in rheumatic patients is due to the implantation of bacteria on unhealed rheumatic vegetations." It appears unlikely that the two diseases represent responses of different intensity to the same infective agent, since organisms other than non-hæmolytic streptococci may be implanted on active rheumatic vegetations, and since it is only in some cases of bacterial endocarditis

that evidences of active "rheumatic" changes in the valve are also found. Sections on clinical features, diagnosis, and hæmatology are, like the rest of the work, based upon an extensive bibliography and supplemented by personal observations and studies.

Dr. Perry's monograph brings up to date and endows with new interest a group of morbid conditions that have of late years received scant attention. It must not be forgotten that close scrutiny of clinical features may in the end yield the clue to successful therapy.

Ideal Birth

By TH. VAN DE VELDE, M.D. London: William Heinemann Ltd. 1936. Pp. 269. 10*s*. 6*d*.

READERS of Dr. Van de Velde's books are familiar with his literary habits. He likes to interpolate aphorisms, and even intermezzos of aphorisms, throughout his text, to quote turgid German poetry, to exalt the subjects about which he writes to mystical levels. These habits have apparently been responsible for the large sale of his books, of which the best known is "Ideal Marriage" (1928). In the five books issued since then these characteristics have been becoming more conspicuous. This one has all the faults of its predecessors—long windedness, sentimentality, inaccuracy—with a new one added; it is badly translated. The book, we are told, is written for future fathers and mothers, for midwives and nurses, and the dust cover says that it can confidently be recommended to doctors. We do not endorse this recommendation.

The Tuberculin Handbook

By HALLIDAY SUTHERLAND, M.D. London: Humphrey Milford, Oxford University Press. 1936. Pp. 96. 7*s*. 6*d*.

THE author of this handbook believes that, apart from the discovery of the tubercle bacillus, Koch's greatest gift to mankind was the introduction of tuberculin for the diagnosis and treatment of tuberculosis. He sets out in non-technical language the most important varieties of tuberculin, exotoxic and endotoxic, the standardisation of old tuberculin, and the recent work of American biochemists on tuberculin split products. Hypersensitiveness to tuberculin in tuberculous subjects is regarded as a specific phenomenon. In a chapter on the use of tuberculin the author describes the early symptoms, physical signs, and radiological appearances of pulmonary tuberculosis; in a subsequent chapter the percutaneous test of Moro, the cutaneous test of Pirquet, and the intracutaneous test of Mantoux. In practice he begins with a series of intracutaneous tests and when a reaction occurs he uses the subcutaneous test to determine whether the infection is latent or active. He does not aim at focal reactions—indeed he seeks to avoid them—but he has seen no harm follow them. A positive diagnosis of active tuberculosis having been thus established a course of tuberculin treatment is begun without delay. But Dr. Sutherland does not think that the diagnosis of pulmonary tuberculosis can always be made with certainty either by tuberculin testing or by radiograms alone; regard must be taken to history, symptoms, and physical signs. A tuberculin test may, however, help to correct interpretation of radiological evidence and vice versa. Of the essential value of tuberculin treatment the author has no doubt, whether for pulmonary tuberculosis, tuberculous adenitis prior to caseation, tabes mesenterica, or tuberculosis of eye and kidney. "Let it be noted," he writes, "that tuberculin gives the best results, and at a fraction of the cost, in those very cases which most sanatoriums are desirous of admitting. If tuberculin treatment can do as much or more than sanatorium treatment, then obviously it would be better that the febrile cases, needing rest and then graduated activity, should be sent to sanatoriums until they have become suitable cases for tuberculin treatment at home. In that way existing organizations could cope with the disease."

Emergency Surgery

Second edition. By HAMILTON BAILEY, F.R.C.S., Surgeon, Royal Northern Hospital, London; Surgeon and Urologist, Essex County Council. Bristol: John Wright and Sons, Ltd.; London: Simpkin Marshall Ltd. 1936. Pp. 842. 50*s*.

THIS popular text-book of surgery, which has been thoroughly revised and in part rewritten, now appears very conveniently in one volume instead of in two. Here emergency treatment in every branch of surgery is described in simple and sometimes even colloquial language. It is evident that the author has had an extensive and varied experience in this kind of work. His recommendations are essentially practical and his judgment is sound. We like particularly his advice to open, if possible, a subphrenic abscess in two stages when it must be done transpleurally; and, should a pelvic abscess after appendicectomy be discovered by laparotomy, to close the wound and to open the abscess by the rectal route. The method of opening the abscess by the forcible use of a blunt instrument (a procedure also advocated for evacuating a collection of blood in Douglas's pouch) does not however appeal to us. It is doubtful also whether the ligation of the ileocolic vein in appendicitis is so often necessary as the author seems to have found it in his practice. Nor is it generally accepted that intravenous mercurochrome is effective in appendicitis and osteomyelitis. The lower approach to a strangulated femoral hernia is held by Mr. Hamilton Bailey to be so objectionable that no description of it is included. There is other debatable matter, but for the most part surgeons in the earlier stages of their emergency experiences will find the book an excellent guide.

Medical Guide for India and Index of Treatment

Fourth edition. By Lieut.-Colonel E. J. O'MEARA, I.M.S. (Retd.), O.B.E., F.R.C.S. Eng., D.P.H. Cantab., late Civil Surgeon and Principal of the Medical School, Agra. London and Calcutta: Butterworth and Co., Ltd. 1935. Pp. 1234. 25*s*.

THE author of this book set himself 16 years ago to provide practitioners in India with a compact medical guide to help them in dealing with their very varied daily work. The book has now reached a fourth edition in which all the more important sections have been recast and more articles by specialists have been included. The fact that some of these—notably those by Lord Horder and Lord Moynihan, Dr. E. P. Cumberbatch, and Prof. J. A. Ryle—are reprinted by permission from issues of medical journals published between 1930 and 1933 would diminish their value for workers who have easy access to current literature, but is probably of less moment to Indian practitioners. The work

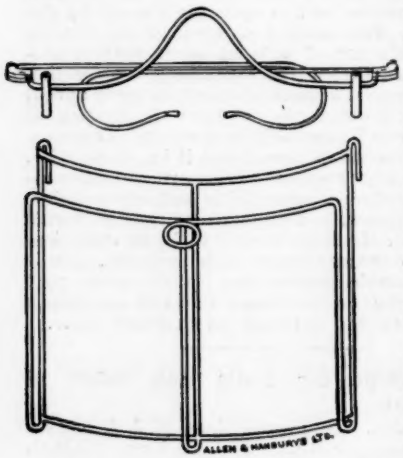
consists of twelve sections of which the largest (312 pages) is an Index of Treatment, brought up to date and remodelled in this edition so as to provide more convenient facilities for reference. Therapeutic measures are considered in the next section; the subjects are discussed for the most part under such general headings as exercise, radium therapy, organotherapy, so that it is surprising to find a chapter devoted to such a subdivision of drug therapy as "organic arsenic compounds." Food and the principles of dietetics provide the material for the third section. Useful chapters here are those on articles of Indian diet and methods of their preparation, and on scales of diet for European and for Indian patients in general and in mental hospitals. The fourth section on surgery takes up 100 pages, with chapters on acute abdominal disease, general anæsthesia, antiseptics, dental surgery, ear and eye diseases, errors of refraction, colour-blindness, instruments, dressings and accessories, manipulative surgery, preparation for operations, after-treatment and complications, and throat and nose diseases; whereas medicine gets only 50 pages, the three chapters being entitled Medical Notes, Recent Advances in Medicine, Examination for Life Insurance. Section VI. is devoted to obstetrics and gynæcology, section VII. to surgical, medical, and obstetrical nursing, section VIII. to preventive medicine and sanitation, and section IX. to medico-legal questions and lunacy. Diagnostic methods and pharmacology (including a pharmacopœia) fill up the remainder of the book except for a miscellaneous section which sets out standard equipment for a model branch dispensary, a medical trades directory, a list of manufacturers of surgical instruments and appliances, and calendars for all the years from 1935 to 1938.

We have no doubt that doctors working in India will continue to find this book useful.

NEW INVENTIONS

AN ASEPTIC FACE MASK

THE examination of chest cases entails a certain amount of risk from contamination by particles or droplets of infected saliva when patients speak or are asked to cough. When patients do not cover the mouth whilst coughing, infected material is expelled into the consulting-room, and not infrequently into the face of the examining doctor. The simple face mask, here illustrated, consists of a nose- and ear-piece fitting in a similar manner to an ordinary spectacle frame, with a detachable mouth shield carrying a slip of filter paper. The patient is asked to put on the nose-piece which, with the light springs behind the ears, adjusts itself; the mouth-piece with its protective filter paper can then be slipped on, and this is effective in catching infected matter. Pieces of filter paper about 5×3 in. are prepared before a clinic; these can be easily slipped into the frame, and are as easily removed with forceps without soiling the fingers. If the ends of the paper are folded there will be no possibility of it slipping out sideways. The advantages claimed for this contrivance are: 1. It is simple and light (weight 1 oz. complete). 2. Easy to clean, being made entirely of silver-plated steel wire. 3. Easy to adjust without tying or stretching elastic bands, and does not interfere with patient's vision, talking, or breathing. 4. Can also be used for inhalant; a drop of Gutt. Cinnam. Co. (Brompton Hospital) is very soothing whilst mask is being worn.



The face mask has been made to my design by Messrs. Allen and Hanburys Ltd.

P. L. T. BENNETT, M.C., M.R.C.S., D.P.H.
Tuberculosis Officer, Fulham.

A FASCIA INTRODUCER FOR HERNIA REPAIR

THE necessity, in hernia operations, for an instrument of this type has arisen with the increasing use of fascial repair introduced by Gallie and LeMesurier. The operation formerly required between 40 and 60 minutes' work. The instrument which is described below will accelerate the operation 5 to 10 minutes for those surgeons who use and personally thread the Gallie needles. In practice it has two further advantages: (*a*) It diminishes tissue trauma in so far as it avoids the passage through the tissues of the mass formed by reduplicated fascia, suture material,

and the eye-end of the Gallie needle. (*b*) It enables the fascia during introduction to be touched by instruments only.

These two factors decrease the tendency to hæmatoma formation and sepsis. The principle is not entirely new in that a forceps, with the sharp ends curved in the long axis, has been used for this work by Keenan of Montreal. The arrangement of the blades at a right angle to the shaft, however, will be found more convenient in use. The closed blades are passed through the tissues, opened and the end of fascia grasped and drawn through in the desired situation. With practice this will be found a rapid method of introduction and will require little further time than that taken for the Bassini repair. I also use the introducer for inserting the non-fascial sutures for repair of femoral hernia by Lotheissen's method.

The instrument has been made for me by Messrs. Allen and Hanburys Ltd.

H. F. MOSELEY, M.Ch. Oxon., F.R.C.S. Eng.

THE LANCET

LONDON: SATURDAY, APRIL 25, 1936

STUDENTS AND TEACHERS

THE report [1] to the Treasury by the University Grants Committee, covering the six years since the last report was made, was published this week. It makes encouraging reading, and should inspire national pride in our university system, where the example of the old institutions has been wisely followed, where the lessons derived from the work of the newer bodies have been gratefully utilised, and where the State and individual donors have been open-handed in support. Considering that the period under review covers the unexpected prolongation of a grave financial depression which still exists, if with diminished force, it is a splendid omen for the intellectual, physical, and moral developments of the country that the Committee should be able to record, with full proof of their words, the substantial measure of progress which marks the present situation. There are on the grant list 16 universities and 3 independent colleges in Great Britain, while there may be added to the list the 2 technical colleges of Manchester and Glasgow. But certain of the universities, notably London, include a large number of separate units; under the heading of the University of London no less than 25 such bodies may be found, in which number is included the 13 medical schools, and it will be noted that medical education is here referred to only from a university standpoint. The Committee have inspected the buildings and equipment in connexion with all these centres, have interviewed representatives of the staffs, professorial and unprofessorial, and of the students, and with each and all have discussed the existing position informally. Such investigations lend a practical value to their words; these have no doubt been supplemented by returns submitted by the institutions, but however lucid and comprehensive such documents may be they must fail to give the accurate story in proper perspective which is derived from personal contact. Throughout the report the result of this interest in individual activities can be seen in the practical quality of the comments.

An increase in the total number of students has taken place wholly in England and Wales; the number of full-time students now stands at about 50,000, or 4500 more than six years ago, but while the figures for England and Wales show a rise in numbers there is a slight fall in the figures from Scotland, attributed mainly to the abstention of women students. The allocation of the students over the main faculty groups is detailed in an appendix, and we see that numerous changes of their distribution in the various groups is marked by a sharp rise in medicine and a notable one in pure science. Six years ago in their last report the Committee recorded a substantial fall in the number of medical students, but the loss has now been more than made good. As a consequence the question of their residence is becoming a particularly vital one, and although it could hardly be expected that any special point should be made of the fact by the Committee, it will be gathered from the report that young men in training for medicine are benefiting from lavish expenditure which has taken place recently, not only on laboratories, libraries, research institutes, students' unions, but also on halls of residence and medical school buildings. Of the total number of all students at the universities and colleges under consideration (excluding of course the students at Oxford and Cambridge) the number living at home totals 22,000, of whom some 6300 are accommodated in halls of residence, but it is good to learn that, in spite of bad times and the severe competition of cheap lodgings, new residential halls are being opened, so that nearly 1000 more students now have residential provision than five or six years ago. To medical students this is of real significance. Where the medical students, either in London or elsewhere, are able to live at home in suitable circumstances, the need for the provision of hostels is not manifest, and it is arguable whether such students lose anything from pursuing their studies in the usual domestic circle. All to-day, however, regard university training as not only a means of acquiring knowledge, but as a medium for general culture and for the exchange of views, ideas, and aspirations leading to a philosophy of life. Many will think that the inestimable advantages of the community life are lost to the medical student who lives at home, and that for all medical students the provision of a hostel near the focus of their work would be an advantage. But life in the medical school must always be bringing all sorts of students in contact with each other in the course of the day's work, wherefore too much stress need not be laid upon the happy influence of the hostel. Looking at the whole question, we believe that there will a predominant feeling that multiplication of hostels in connexion with the medical schools marks a step forward. And while it may be possible to obtain accommodation in lodgings at a lower figure than at many hostels, we have to remember that the number of students financially assisted in one way or another has now greatly increased. The Committee emphasise the extent to which an approach to the university institutions of this country is now made possible by scholarship allowances or eleemosynary grants.

Has the number of teachers increased in proportion to the increase of students? It would seem from the figures in an appendix that there has been an increase of 13 per cent. in the total numbers of the staff employed in the university institutions

[1] University Grants Committee. Report for the period 1929–30 to 1934–35. London: H.M. Stationery Office. Pp. 84. 4s.

of the country, a percentage which is rather larger than the percentage increase in the total number of students, though not when only the medical students are taken into consideration. But we are glad to learn that there has been a definite though modest improvement in the average salaries of the five grades of university teacher. How far the salaries of those concerned with the medical schools will benefit under average advancement is doubtful, but their work remains by no means overpaid while the responsibilities have greatly grown. Many a teacher in a medical school, when he thinks over his day's work, will envy the time, not so long gone by, when, save as a demonstrator, his routine duty could have been discharged by the delivery of set lectures and his fame as an educationist might have been established by his punctuality and his eloquence. He may also feel that the estimate now held as to the value of such discourses is unfairly low, knowing that he could communicate sound learning in this way. Undoubtedly many lecturers could thus prove of the greatest assistance to students, but the report indicates shrewdly why the lecture system has fallen into disrepute. Unless compulsory the attendances will not be such as to maintain for the teacher an interest in fruitful labour; but if compulsory a spirit is introduced which is inimical to modern university training.

In reviewing a long and detailed report, while noting mainly certain of its medical messages, it is impossible to refer to much that has medical as well as general importance. But an expression of admiration is due for the wealth of information imparted, while the evidence of national progress in the greatest sphere of civilisation is heartening in the times we live in.

VOLUNTARY HYPERTENSION

No simple explanation of "essential" hypertension is likely to be forthcoming. A promising approach has been through study of suprarenal secretion and attempts to correlate hypertension with an excess of pressor substances in the blood. Not only, however, has this line of inquiry proved disappointing, but it has revealed new difficulties regarding the relationship of the adrenal cortex to blood pressure. Thus it has been established that neuroblastomas of the suprarenal medulla do not result in hypertension, whereas chromaffinomas do so whether situated in medulla or cortex. Nevertheless, though no actual excess of pressor substances can be recognised in the blood of patients suffering from essential hypertension, it is not impossible that a relative excess may be brought about by deficiency of the hypotensive bodies, such as choline, acetylcholine, histamine, and vagotonine. This last substance, isolated from the pancreas, has a slow action compared with the better known parasympathetic stimulants, and is said to have given encouraging results in the treatment of hypertension.

The importance of psychical factors in the pathogenesis of hypertension has had much consideration since ALLBUTT'S pronouncement on the relation between mental anxiety and the development of granular kidney. AYMAN has described a "hypertensive personality," which is "dynamic" and "quick-tempered," and it is well known that emotional tension may be associated with a temporary increase in blood pressure just as it may affect visceral activity. ABRAMI, WALLICH, and BERNAL[1] now report that a number of subjects have been trained to raise their blood pressure (by as much as 100 per cent.) *voluntarily*. The rise is rapid and transient—lasting about a minute. The venous pressure, the intra-ocular tension, and the pressure of the cerebro-spinal fluid increase simultaneously, and it is also noticed that the internal temperature rises and the pupils are dilated. Curiously enough, the heart-rate is increased, despite the big rise in blood pressure. As an example of these remarkable observations the following figures may be quoted: a systolic pressure of 120 mm. Hg rose to 270–280, while in a few seconds the diastolic reading changed from 50 to 100 mm. Hg. The authors describe in addition changes occurring at the same time in other systems of the body, and mention that neither atropine, adrenaline, nor vagotonine affected the phenomena of "voluntary hypertension." Ergotamine seemed to delay the onset, and with strychnine the effect was obtained more easily and was of longer duration. The first to discover that he could raise his blood pressure at will was, it is stated, Mr. DINO GALARDI, aged 38; and he has been able to teach others to do it for themselves. Unfortunately, from the facts given, it cannot be understood just how the feat is performed, but it is emphasised that there is no question of straining or of generalised contraction of the body muscles.

It is to be hoped that Dr. ABRAMI and his colleagues will be invited to demonstrate their cases in this country.

SCARLET FEVER IN HOSPITAL AND HOME

DURING the last few years our views about scarlet fever, from the epidemiological and clinical standpoint, have substantially changed, largely as the result of the work of the DICKS. SYDENHAM named the disease from the appearance of the rash, and from his time onwards the occurrence of a more or less characteristic erythema has been regarded as an essential element in the clinical picture. The rash is the visible result of the dilatation of skin capillaries by an erythrogenic toxin produced by strains of a hæmolytic streptococcus implanted and growing upon the fauces. Since not all infections with causal strains result in the release of sufficient toxin to produce a clinically recognisable rash, this must be regarded as a by no means constant epiphenomenon. "Scarlet fever" is essentially an infective nasopharyngitis, and although there may not be agreement with all the views recently expressed in our columns by Dr. F. G. HOBSON,[2] it cannot be refuted—indeed,

[1] Abrami, P., Wallich, R., and Bernal, P.: Presse méd., Feb. 26th, 1936, p. 321.
[2] THE LANCET, Feb. 22nd, 1936, p. 417.

it is admitted on all sides—that the hospitalisation upon a large scale of patients suffering from "streptococcal fever with a rash" has quite failed to control the incidence of the disease whether in its endemic or epidemic phase. The reasons are familiar to epidemiologists. With few exceptions, patients are not removed to hospital, or even isolated at home, unless the rash appears to clinch the diagnosis; the much more numerous and, because unrecognised, much more dangerous sufferers from sore-throats caused by the same organism, and the carriers, remain at large. Nevertheless, in spite of the prevailing mildness of the disease as generally conceived, the public insists, as a social service mainly, upon its hospitalisation.

After the patient's return home from hospital scarlet fever occurs in some other member of the household in 2 to 4 per cent. of cases. This has long been recognised, although in these "return" cases the source of infection is not necessarily the discharged patient. Genuine or not, return cases have led in the past, and on occasion still lead, to allegations of premature or improper release from isolation. We learn from the *Northern Despatch* that in a village in the north of England "widespread distress and something like a state of panic" exist among parents who are refusing to send their children to school "for fear of contact with cases recently discharged" from an isolation hospital in a neighbouring town. The main cause of complaint is that whereas the school managers are under the impression that the period of isolation for scarlet fever is at least six weeks, there is definite evidence of four children being discharged from hospital after not more than three weeks' stay. A counter-allegation of the "dirty condition" of the school as contributory to the outbreak, although illuminating, may be regarded as irrelevant for the present purpose, and the point at issue is whether the shortened period of detention resulted in return cases. It is the general experience of the medical superintendents of the large London fever hospitals who may admit and discharge during the year from one to two thousand scarlet-fever patients alone that a shortened period of detention of patients does not increase the return-case rate. It is an axiom of fever hospital practice that the scarlet-fever patient who is most likely to give rise to return cases is one who has been detained not for four weeks or less but, on account of some complication, for possibly fourteen weeks or more. Nearly ten years ago, as the result of evidence obtained from all over the country, the opinion was expressed[3] "that there is no good reason for prescribing a *routine* period of detention in hospital of more than four weeks in uncomplicated cases," and the old six-week period which was based upon the now exploded belief in the infectivity of desquamation has long been abandoned by most fever authorities. There is no evidence that the adoption for the uncomplicated case, as a deliberate policy in properly spaced wards and not as a measure of exigency, of a period of detention of four weeks has had anything but a favourable effect upon the return-case rate. Dr. H. STANLEY BANKS indeed advocates,[4] in conjunction with the intravenous injection of scarlet fever antitoxin, a much shorter period. In a series of 1010 cases of scarlet fever thus treated the average duration of stay in hospital was 17·4 days and the return-case rate for the series 2·7 per cent.

The clues to the particular complaint of which we have spoken are to be found perhaps in a statement by the local medical officer of health. On the one hand, the isolation hospital was stated to be absolutely full and its medical superintendent therefore contended "that the mild cases, after three weeks, would do much better at home, owing to the congestion of the wards and the atmosphere being, naturally, full of virulent germs. . . ." On the other hand, it appears that most of the patients came from small two-bed-roomed cottages, and thus any measure of isolation after discharge was held to be impossible. Here then is a vicious circle—the demand not only for hospitalisation but for a fixed (and obsolete) period of detention; the packing of wards with patients who, under the circumstances, were better left at home since they would at least have been recognised as infectious and such precautions as were possible enforced; the efforts to make yet more accommodation in hospital by the early discharge, based upon necessity, of patients almost certainly reinfected by the hæmolytic streptococcus in the overcrowded wards; and thus the further dissemination of infection either in the inadequate homes or at school and the provision of fresh cases for the hospital. The time has surely come for local authorities to appreciate that adequate bed-spacing is the right of every fever patient; that overcrowding of wards in an attempt to cope with an impossible situation merely makes matters worse; and that under such conditions—be the stay long or short, six weeks or three—return cases, which can never be eliminated entirely, inevitably become more numerous. Outside London and other large cities and some smaller progressive towns, in how many fever hospitals in normal times, to say nothing of epidemic periods, is the minimum spacing of the Ministry of Health (12 feet between bed centres) adopted and adhered to?

[3] Ministry of Health Reps. on Public Health and Med. Subjects, No. 35, 1927, p. 220.

[4] L.C.C. Ann. Rep. Med. Officer, 1934, vol. iv. (Part I.), p. 82.

WHEN, four months before his death last December, Dr. Griffith Evans celebrated his hundredth birthday, he was acknowledged as the father of the veterinary profession in this country. The University College of North Wales has decided to build an extension of the veterinary department in the school of agriculture at Bangor and to name it the "Dr. Griffith Evans memorial wing." This will be an appropriate tribute to his memory, for he was the first lecturer in veterinary hygiene at the College, though the value of his contributions to science was not fully recognised until long after he made them. An appeal is being made to members of both medical and veterinary professions to subscribe to the memorial. Of the £4000 needed over £1000 has already been received, and the Ministry of Agriculture has promised to grant a pound for each pound of the first £2000 collected.

ANNOTATIONS

ESSENTIALS OF FRACTURE TREATMENT

THE treatment of fractures is not new. A recent writer has pointed out [1] that we have evidence of quite efficient treatment of fractures of the forearm at least 4500 years ago, though at this early date the management of fractures of the femur was not so good as it is to-day. But the principles were well recognised and established. Hippocrates used traction and countertraction for reduction and the modern plaster-of-Paris casts were represented by splints made of strips of cloth passed through molten wax. The necessity for padding bony points was recognised, and orthopædic tables and pulleys were in use. Hippocrates insisted upon the necessity for prompt reduction, advice which is too often disregarded, saying "extension of fractured or dislocated bones is not to be delayed to the third day, but is to be carried out on the first day." All that we have really gained since his time is the power of safe open reduction and of skeletal traction. Hippocrates insisted that broken bone-ends should be brought into apposition and that no movement should be allowed until the fracture became solid. If we add to this that all movements which do not endanger this fixity should be encouraged we have the three great principles in the modern treatment of fractures. These principles can be carried out if the practitioner has the common sense of everyday mechanics, a knowledge of anatomy, especially the anatomy of muscular action, a smattering of physiology which informs him of the advantages of elevation and the drawbacks of pressure upon bony points, and an acquaintance with the use of a few standard splints, particularly with the management of plaster-of-Paris. That there is no best way for treating any particular fracture is abundantly evident to anyone who visits different fracture centres of note. In each he will find excellent results obtained, but by very different methods. The factor common to all of them is a personnel which adheres strictly to the principles laid down above and is endowed with the necessary qualifications for carrying them out. Fractures must receive as much attention as any abdominal operation; a daily, or more than daily, inspection and control alone will ensure a uniformity of good results. In general surgical clinics, where such conditions prevail, the fracture work is fully of the standard of that in special clinics; indeed, it is likely to be of a higher standard, because of the greater breadth of outlook of general surgery. It is certainly true that the efficient treatment of fractures depends far more upon the quality and temperament of the surgeons who undertake the work than upon the possession of any special knowledge or indeed of any special skill. Effective methods of treating fractures have been worked out years ago, but not everyone can put them into practice.

THE ACTION OF CYCLOPROPANE

WRITING on the use of cyclopropane in obstetrics, R. T. Knight [2] brings out the difference between its action and those of the other general anæsthetics. Cyclopropane, he maintains, has as its chief characteristic that the vital centres and the parasympathetic system are left unaffected long after the desired effects have been produced. It is well known by all who have used the agent that the slowing down and actual stoppage of breathing under cyclopropane have not the sinister significance they usually bear during general anæsthesia. The quietness, and even absence, of respiratory movements of a patient under cyclopropane are not associated with the dilatation of the pupil or duskiness of complexion which are seen in respiratory depression caused by other agents. This is because the respiratory arrest is not due to any central action but is merely the result of inhibition of motor neurons in the cord and of relaxation of muscles of respiration. In accordance with this paralysis of reflex arcs brought about by cyclopropane the intestine lies small and contracted in the abdomen, just as when an endothecal injection of an analgesic has been made. Knight also shows that, so far as his comparatively small series is evidence, the blood loss during childbirth is less under cyclopropane than under other anæsthetics.

EFFECTS OF RADIUM ON THE EYE

THE radiation treatment of malignant disease in the neighbourhood of the eye presents certain special difficulties. In a communication to the Ophthalmological Congress on April 3rd Mrs. Philippa Martin, F.R.C.S., described the investigation into the effects of irradiating the eye carried out by her while holding the Percival Alleyn scholarship at University College Hospital. She has previously [1] described the early and late effects. First a conjunctival reaction appears with chemosis, usually at the lower fornix, accompanied by a watery discharge which may become muco-purulent; pain is not a pronounced feature. Late effects include scarring of the conjunctiva, obliteration of the puncta, chemosis, and corneal ulceration. Iritis is an early complication which suggests severe injury, and may be followed by necrosis of the cornea or cataract. Mrs. Martin now gives a more detailed description of radium necrosis as seen in the eye, particularly the effects of radium on the cornea, and makes valuable suggestions as to treatment. Radium necrosis of the cornea may occur, she says, in any case in which intensive irradiation is used in the treatment of adjacent malignant disease. The time of onset varies with the intensity of irradiation. The reaction is much more severe and early after repeated irradiation or in the presence of sepsis, particularly when the infection has been intensified by surgical intervention. The earliest sign of damage to the cornea is a diminution of sensation—the response to light cotton-wool touch being slower than in the normal eye. After a few weeks or months the cornea may lose its polish, and in a few hours a small superficial ulcer may appear and spread slowly. The condition may be arrested at this stage or it may progress even to perforation, but even in these cases infection of the whole eye is slow to develop. The process of repair may not begin for months and in any case will be slow. It can be expedited or at least encouraged by methods which Mrs. Martin outlines. As soon as the first signs of ulceration appear a mydriatic should be used and the eye bandaged. This should not be a routine procedure in the early weeks following radiation even if pain is present, because the swelling of lids and conjunctiva makes the estimation of tension impossible. Where intense radiation is planned a mydriatic should be used to dilate the pupil beforehand and the exact size noted for purposes of comparison. In these cases it is often advisable to stitch the lids together during

[1] Magnuson, P. B.: Surg., Gyn., and Obst., Feb. 15th, 1936, p. 276.
[2] Anæsth. and Analges., March–April, 1936, p. 63.

[1] Transactions of the Ophthalmological Society, 1933, liii., 246.

radiation. When radium necrosis appears to be spreading a tarsorrhaphy should be done, with special care in view of the delayed healing of irradiated tissues. Even when the ulcer perforates it is not always necessary to remove the eye; the infection is usually mild and healing may occur. The cases recorded were mostly treated some years ago with interstitial radium needles and the dosage is given in milligramme hours. It is encouraging to find that the damage to the eye was not as a rule very severe, though the dosage given was necessarily high.

During the last three years several patients have been irradiated by the 1-gramme unit without severe reaction. In this connexion Mrs. Martin points out that any attempt to protect the eye from the deleterious effects of irradiation by the use of a metallic screen is dangerous; the screen acts as a source of secondary radiation and increases the damage to the eye. It would seem that we have here a possible method of treating malignant neoplasms near the eye without necessarily destroying function. In the past many such neoplasms have been allowed to advance to an extent where both sight and life were lost in the attempt to save the eye.

A NEW CLASSIFICATION FOR MEDICAL LIBRARIES

BOOKS on special library classification are rare, yet the subject concerns not only librarians but also the many who have occasion to visit libraries and wish to make the best possible use of them. Mr. Barnard has set out in a handy volume [1] the result of the experience he has gained in building up a fine collection of medical literature at the London School of Hygiene and Tropical Medicine. In a short explanatory introduction Mr. Barnard points out that he has devised his scheme of classification on an essentially practical basis, and in this respect he has undoubtedly made improvements on the Universal Decimal Classification (U.D.C.). The adoption (following Cutter) of an almost pure alphabetical notation, instead of a numerical one, certainly shortens the symbols for the same minuteness of subdivision, but at the same time some of the mnemonic value of the latter is lost. Another difference is that Mr. Barnard had adopted (independently) the method of specific entry in use in the Boston medical library—that is to say, all works are entered under one subject heading no matter what the aspect. The anatomy of the thyroid, for instance, is entered with physiology, pathology, and surgery of this organ under U Q O, whereas in the U.D.C. a definite line is drawn between organs in health and in disease, the biochemistry and physiology of thyroid being given the number 612.44, and the pathology and treatment of thyroid disease 616.44. The only real criticism of Mr. Barnard's scheme, from the point of view of a general medical library, is that, out of 26 main alphabetical divisions, he allots as many as 8 letters (H–O) to the sections of Bacteriology, Parasitology, and Medical Zoology, whilst an important division such as Midwifery is put in a subdivision U W. For libraries used chiefly by laboratory research workers this allocation is no doubt justifiable, but in any library intended for clinicians, the division U (Specialities of Medicine) is liable to become hypertrophied. Minor criticisms concern the logical arrangement and the placing of related subjects in the scheme. Preventive Medicine (S), for instance, might be expected to precede Diagnosis and Therapeutics (Q and R). Apart from such details, however, this new alphabetical classification is certainly practical, and many medical librarians in the future are likely to adopt it; others may even think of exchanging existing classifications for this system. Even ardent and prejudiced "decimalists" are likely to admit that this new classification compares not at all unfavourably with the U.D.C.

[1] A Classification for Medical Libraries. By Cyril C. Barnard, B.A. Lond., Univ. Lond. Dipl. Librarianship, F.L.A., Librarian, London School of Hygiene and Tropical Medicine, London: Percy Lund, Humphries and Co., Ltd. 1936. Pp. ? 2. 10s. 6d.

EXPERIMENTAL MYOCARDIAL ISCHÆMIA

WHILE it is accepted that the essential anatomical lesion of nearly all cases of effort angina and myocardial infarction is atheroma of the larger coronary arteries, aggravation of ischæmia in the former case has been thought to occur as a result of vasoconstriction, which, experimentally, can be brought about by vagal stimulation. Myocardial ischæmia is not generally recognised in man as a result of vasoconstriction alone, but G. E. Hall, G. H. Ettinger, and F. G. Banting have now, by injecting acetylcholine, the chemical agent through which vagal and all other parasympathetic action is effected, produced changes in the myocardium of dogs.[1] Evidence of the temporary effect of the drug at the time of the injection was present in salivation, tachycardia, dyspnœa, and peripheral vasodilatation. After a time systolic murmurs appeared and the electrocardiogram showed changes; terminally there were signs of cardiac failure, the animals dying with extreme dyspnœa or cyanosis, or in some cases unexpectedly. Sections of the heart revealed varying degrees of pathological changes, those in older dogs being more severe; there was hyaline change in the medium and smaller arteries, fibrosis in the media, and in some cases thrombosis in the lumen. The myocardium showed recent infarcts and areas of fibrosis. In the young dogs there were myocardial but no arterial changes. The authors point out that the most severe vascular changes are found in just those areas where vagal action is unopposed by the sympathetic—namely, in the medium and smaller arteries.

Another report concerns the action of Euphyllin in opening up a collateral circulation after experimental coronary occlusion. W. M. Fowler, H. M. Hurewitz, and F. M. Smith found [2] that, after tying the anterior descending branch of the left coronary in the dog, the area of cyanosis which then appeared on the heart wall could be considerably reduced by an injection of this drug, which is a combination of theophylline and ethylene-diamine, the effect persisting for at least one and a half hours. A distinct fall in blood pressure occurred after the injection, but this could be almost eliminated by giving it slowly combined with a hypertonic glucose solution. The late effects of the ligature in dogs which received the drug daily for a period of three weeks were found to be much less extensive than in controls; at autopsy the infarcted area was definitely smaller in the former group. On the clinical side an effective action by euphyllin on symptoms suggesting coronary disease is claimed [3] by F. M. Smith, H. W. Rathe, and W. D. Paul. Of four cases of congestive failure in which it was tried two showed improvement coinciding with the administration of the drug; the control period however was short. The results in 100 cases with paroxysmal dyspnœa, angina of effort, and acute

[1] Canad. Med. Assoc. Jour., January, 1936, p. 9.
[2] Arch. Internal Med., December, 1935, p. 1242.
[3] Ibid., p. 1250.

coronary occlusion were favourable in 72, doubtful in 11, and negative in 17. Assessment of the results of treatment of these symptoms, as with most paroxysmal conditions, is difficult, and while Smith and his co-workers were careful to observe patients when the drug was withheld, no placebo appears to have been given at these times. It may be recalled that in the fully controlled study [4] of Evans and Hoyle on angina of effort the results obtained with a placebo were superior to those with euphyllin.

ANORECTAL GONORRHŒA IN WOMEN

THE medical mind is so accustomed to associate gonorrhœa with the genito-urinary tract that the possibility of extragenital infection is apt to be forgotten. It has long been recognised that this type is commonest in the anus and the rectum in the female, involvement of which is, as a rule, secondary to infection of the usual sites. Nevertheless it is an aspect of the disease that has received comparatively little attention and which presents a number of unsolved problems of considerable potential importance. There seem to be two reasons for this neglect. The symptoms of anorectal infection are generally either absent or so slight that the patient's anxiety is not aroused and no complaint is made, and there are seldom any external signs. Secondly, many who treat gonorrhœa in the female believe that the infection in this area is self-limited, and that unless there are serious symptoms and signs no treatment is required. This attitude is not necessarily due to carelessness or lack of interest, but may be due to the difficulty of persuading some women with gonococcal infections to continue with treatment after their symptoms have subsided. If they are subjected to additional annoyance and discomfort from manipulation and instrumentation of the anal canal, some of them will cease to attend. Whatever the reason, it is probable that the majority of women that are treated for gonorrhœa and passed as free from infection never undergo clinical and bacteriological examination of the anal canal and its contents.

Most of the reports on this subject have come from abroad, but Clements and Hughes [5] have shown that the condition is equally common in this country. Among 160 women in whom genito-urinary gonorrhœa was present or suspected, 69 had anorectal involvement as shown by smears or culture, or by both. The latter proved to be more effective in isolating the gonococcus, but the best results were obtained by combining the two methods. Observation without treatment was carried out in 10 of their cases for periods not exceeding seven months and this convinced them that the disease is not self-limited. Brunet and Salberg, of Chicago,[6] have now reviewed the results of their investigations over three years, and their series includes 250 cases of anorectal infection, forming 42 per cent. of all their female patients who were found to have gonorrhœa. Only 25 patients complained of symptoms which were referable to the anal infection, and in most of these the symptoms were not severe. The diagnosis was made by means of smears taken from the anal contents, and the presence of intracellular Gram-negative diplococci, together with 25 or more pus cells per field, was accepted as evidence of a gonococcal infection. As a control, smears were taken from more than 200 women without evidence of past or present infection, and in these no Gram-negative diplococci were found; pus cells were discovered only occasionally and then not more than 5 to the field. Cultural methods proved to be too involved and inconclusive, and therefore of no practical value as an aid to diagnosis. On proctoscopic examination of 111 of the infected patients, 40 showed no changes in the anal and rectal mucosæ. In the remainder there were varying degrees of inflammatory change but nothing which could be described as characteristic of this infection. Complications were uncommon; there were no cases of rectal stricture, only 4 of perineal abscess, and 3 of rectal fistula. After treatment, mainly with medicated suppositories, hot sitz baths, and mineral oils by mouth, cure was judged to have been obtained in an average time of 19 weeks. It was found possible to re-examine 59 patients, who had defaulted, after intervals varying from 6 months to 2 years; all were symptomless, but in 10 the smears were positive; in the remaining 49 the smears were negative. These investigators adhere to the accepted view that infection occurs from the vagina, probably by the discharge passing over the everted anal mucous membrane during the act of defæcation. They believe with Rosser [7] that the anal crypts (sinuses of Morgagni) form ideal reservoirs for the infection, which may persist in the anal canal long after the urethra and cervix are clear.

The question as to the self-limitation of these infections when they remain untreated does not appear to be settled by the evidence at present available, but it is quite certain that the gonococcus can persist in the anus and rectum for considerable periods. If, as Brunet and Salberg believe, the urethra and cervix may be reinfected from this site, anorectal gonorrhœa must be regarded as one possible cause of the frequent and lamentable cases of "recurrence" and "reinfection" which occur among women who remain under observation after treatment for genital gonorrhœa. There is no evidence to show that infection in this site can act as the initial focus in the metastatic infections of gonorrhœa, but it is important that the possibility should not be overlooked when the origin of infections of this type cannot be traced. The disagreement as to the value of cultural methods for isolating the gonococcus, which is evident in these reports and in many others relating to gonorrhœa, is an example of the extraordinary lack of unanimity of opinion on many fundamental points associated with the study of these infections. There can be no doubt that many pathologists have failed to overcome the inherent difficulties of the artificial cultivation of the gonococcus, and that the quality and value of clinical work in gonococcal infections suffer accordingly.

TELEPHONES FOR THE DEAF

DEAFNESS is usually a bar to easy conversation on the telephone, and may deprive the sufferer of many of its benefits in society and in business. We are glad therefore to hear that the Post Office is now prepared to install a new type of instrument in which the volume of sound may be increased, according to the listener's requirements, by turning a control knob. This special telephone, with its speech-amplifying equipment, is said to be effective in all but extreme cases of deafness, and it is equally useful for local and for long-distance calls. A correspondent of the *Times* (April 18th) writes that though she suffers from almost complete deafness,

[4] Quart. Jour. Med., July, 1933, p. 311.
[5] Clements, P. A., and Hughes, K. E. A.: THE LANCET, 1935, ii., 18.
[6] Brunet, W. M., and Salberg, J. B.: Amer. Jour. Syph., January, 1936, p. 37.
[7] Rosser, C.: Texas State Jour. Med., 1933, xxix., 390.

she is now able to hear the voices of her friends on the telephone—a pleasure previously denied her for very many years. The amplifying equipment is contained in a small cabinet which can easily be accommodated in any out-of-the-way position near the telephone, and the instrument can be fitted on any installation served by an automatic exchange, or by a manual exchange of the type provided in the more populous areas, at an extra charge of 10*s.* a quarter.

MINISTERING TO THE SICK

THERE can be no sharp line drawn across the map of medical treatment which attempts to allot provinces on the one side to exact therapeutics and on the other to the various attentions on physical and moral well-being of patients such as fall under the headings of religious support, mental guidance, sympathy in family troubles, or the provision of diversions. The doctor's work may be assisted by the priest, almoner, and hospital visitor, and the medical profession knows very well the wide influence for good and the favourable impulses towards restoration that follow upon the intelligent aid of sympathetic persons outside the professional rank. And the priest may occupy the honourable and peculiar position of adjutant in the direct medical treatment. In domiciliary medicine this can be well observed where the patient belongs to the priest's flock, but in the hospital where the patient is personally unknown to the priest the value of religious ministration has been much debated. To many his presence round the bedside appears to be nothing but a nuisance. He is needed, they would say, neither in diagnosis nor treatment, and being no expert in many social difficulties it cannot be expected that his coöperation can be of any practical value. Dr. Richard Cabot and the Rev. Russell Dicks, B.D., have written an interesting book setting out the claims of the minister to be present in the sick-room, paying regard to the limitations of his knowledge, while pointing to the unlimited value which spiritual assistance may be to the patient.[1] The authors believe profoundly in the value of coöperation between the doctor and the minister in hospital work—they only consider in any detail the patient in the institution—and they propose to show that the aims which will call the minister to the bedside are to counteract the evils of specialism, and to give devotion and spiritual care such as only religion can inspire. By the words counteraction of specialism it is implied that medical treatment, however broad, is of a special character, while social and spiritual diagnosis in the presence of disease require qualities which no doctor, unless by accident, can attempt to offer. Criticism of a work written with deep sincerity is made difficult because it is not possible to assess devotional belief as a method of treatment in the same sort of way in which therapeutic procedures and operative methods can be submitted to judgment. One does not know how far such belief is present in any given case of improvement or recovery. The dual treatment, as suggested in the book, comes into play mainly in institutional treatment, where it may be thought to be of less value than in the home, and where the circumstances of environment are so favourable to moral as well as physical change that the actual cause of any alteration for good must always be uncertain. The part allotted by the authors to the minister is magnificent, and brings about with it the discharge of difficult and ungrateful duties: to discharge them he must be an extraordinarily endowed person, possessing faith, intuition, delicate tact, broad sympathy, scriptural knowledge, familiarity with topical literature. All these qualities are in the examples of religious treatments set out, and as we are apt to endow the ideal doctor in talking of him with many of them, we must not grudge them to the ideal priest. Each may hope to display them, and in their exhibition may find as a result physical and moral betterment of the patient in accordance with the well-known influence of mind on body. But the authors suggest that in institutional life the priest would find a proper rôle in supervising the amenities of the institution in a way that in this country would bring him into collision with the heads of the managerial and nursing departments. Every doctor knows the store that is set by many patients upon the ministrations of the clergyman and knows also their value from the therapeutic point of view in certain cases, even while unable to assess that value in any exact terms or predict its display in any particular case. But it seems highly doubtful if either the medical staff or the lay management would regard the visiting clergyman as a fitting mediator in staff troubles. If the secretary of the hospital and the superintendent of the nurses chose to consult him on points of difficulty no doubt they might benefit by his advice, but to interfere in these departments is not comparable to helping the sick; it is comparable to advising the doctor as to medical treatment, and that we do not commend. But we *can* commend the book to which we are referring as one dealing with questions that are often before the medical profession in this country, if not in exactly the same form in which they have presented themselves to the able and sincere American writers.

[1] The Art of Ministering to the Sick. By Richard C. Cabot, M.D., and Russell L. Dicks, B.D. London: Macmillan and Co., Ltd. 1936. Pp. 384. 12*s.* 6*d.*

WILLIAM B. COLEY

THE death in New York on April 16th of William Bradley Coley at the age of 75 years removes a forceful figure from American surgical life. In this country his name is chiefly associated with a fluid for the relief of inoperable cancer. Moved by Paget's observation that malignant tumours occasionally diminish or disappear after an attack of erysipelas Coley worked assiduously on the action of living streptococci in sarcoma and 45 years ago he published an extensive series of cases of inoperable sarcoma which had shown benefit after injection of the combined toxins of *B. prodigiosus* and *Strept. erysipelatis*. Other surgeons had like experience of benefit in 2 to 4 per cent. of such cases, and in 1910 Coley's fluid was included in the list of non-official remedies compiled by the American Council on Pharmacy and Chemistry. Coley never ceased to develop this treatment and ten years ago he and his brother recorded the completed story of 55 cases of sarcoma in which the diagnosis had been confirmed by well-known pathologists. A few months back the Council on Pharmacy in reviewing the whole of the evidence concluded that the combined toxins of erysipelas and prodigiosus may play a significant rôle in preventing or retarding malignant recurrence or metastasis, and on occasion may be curative in hopelessly inoperable neoplasms. But Coley was not a man of one idea. He held the chair of clinical cancer research at Cornell and was always a seeker after truth. His own papers are models of clinical presentation and so fully documented as to command attention from other workers in the same field. He was on the staff of the Hospital for Ruptured

and Crippled in New York, and it was in connexion with the operative treatment of hernia that his name first came into prominence. Last month, in the *American Journal of Surgery*, he told the story of the radical cure of hernia during half a century. He had friends in many countries, for he was a man of wide general knowledge, interested in men and affairs. Evidence of this was afforded by his reception last October when the honorary fellowship of the Royal College of Surgeons of England was conferred upon him and he was later entertained by Glasgow surgeons. His country home in Sharon became a meeting-place for his European friends. There was determination and pertinacity in his nature which enabled him to do what he did in spite of the acromegaly from which he was a lifelong sufferer and the ulcer which necessitated gastro-enterostomy—performed under local anæsthesia. For many years he was consultant to one of the large American railway companies.

POST-OPERATIVE GANGRENE

Liedberg of Lund reports[1] two further cases of the rare post-operative gangrene of the skin, one following operation for gangrenous appendicitis, and the other complicating suppurative mastitis. The onset was, as usual, gradual and the progress unrelenting, "centimetre by centimetre, week by week." The ulcerating edge just outside the frankly gangrenous margin gave rise to the same intense pain and tenderness as has been described by other authors, and the extending margin showed the three typical zones, of blackish gangrene, bluish-red, and bright red inflammation. The wound in which gangrene followed appendicectomy was clean-stitched, but the appendix was definitely gangrenous, so that the skin edge may very easily have been infected. In most reported cases the wounds have been drained, and this is of importance because the condition is generally attributed to symbiotic invasion by a streptococcus from the intestine (or at any rate from the peritoneal cavity) and a staphylococcus from the skin. In view of this supposed ætiology, the occurrence of the disease in the breast is somewhat unexpected; and indeed all previous reports have been of gangrene after operations on the serous cavities, either for empyema, or for diseases of the stomach or intestine. In the case of mastitis here reported the patient developed a swelling like a carbuncle, which was incised. The pain was severe and the wound broke down into an ulcer involving the inner and upper part of the left breast and the size of a child's hand. The process spread rapidly in the three weeks following, but was at once arrested by excision of the whole of the altered skin with the diathermy knife. The pain was completely relieved by the operation, and healing began; and though a subcutaneous abscess had to be opened about three weeks later, there was no further gangrene. The temperature was moderate throughout. The other case, in which the gangrene followed appendicectomy, was fatal; but apparently excision of the wound was not so thorough. Complete excision, extending out into the healthy skin, seems to be an almost certain cure, and no other measure is worth considering. Liedberg quotes Meleney as finding very little to choose between excision by the scalpel or the cautery knife. He himself rather prefers the cautery because its use prevents great loss of blood. A mixed growth of staphylococci and streptococci was obtained in the appendix case, but only staphylococci in the one with mastitis. Liedberg gives a useful résumé of 40 cases recorded before his own.

[1] Liedberg, N.: Acta Chir. Scand., 1936, lxxvii., 354.

TESTS FOR VITAMIN DEFICIENCY

In our last issue Dr. L. J. Harris and Mr. P. C. Leong described a new test for vitamin-B_1 deficiency in human beings. As in Harris and Ray's test for vitamin-C deficiency, the patient is given a large dose of the vitamin and the urine is examined to find out how much of it is excreted. If a person has had ample supplies of the vitamin in his diet his tissues will be "saturated" and he will excrete a large proportion of this test dose; on the other hand, if he is suffering from a deficiency his "unsaturated" tissues will retain more and he will excrete less. Dr. Harris believes that these tests provide good objective evidence of specific deficiencies, and in a further article on p. 966 he argues that the methods now available should enable us to arrive at much more satisfactory standards of sound nutrition. To this end he wants to see surveys undertaken to discover the incidence of definite nutritional defects throughout the country; but the question arises how far the tests he enumerates can yet be taken as established. Confirmatory reports on the urinary excretion test for vitamin C are continually appearing, but the similar test for vitamin B_1 is, of course, only in its infancy, and the validity of the Jeans and Zentmire's photometer test for partial vitamin-A deficiency has not been fully accepted. Fortunately its authors have just furnished further confirmation[1] of their first observations, published in 1934, on the use of the photometer for the ascertainment of night-blindness. Failure in adaptation to darkness is regarded as one of the earliest symptoms of vitamin-A deficiency, and though it is not entirely specific its dependence on vitamin-A lack in any given case or series of cases can always be proved by giving this vitamin and noting the results. The photometer test is now placed on a far more satisfactory basis as a criterion of vitamin-A insufficiency by Jeans and Zentmire's study of the incidence of night-blindness in a widely varied group of Iowa school-children, including rural and village children, and also urban ones from various economic levels. The observers were astonished at the high percentage (36), even among rural children, who failed to react normally, while among the poorest urban children only 11 per cent. were regarded as normal, the village and better-off urban children showing intermediate results. Administration of halibut-liver oil or carotene brought back the photometer reaction to normal in all but a tiny fraction. The specificity of the photometer test as a criterion of vitamin-A insufficiency was thus corroborated and the existence of a widespread slight deficiency of this vitamin, at least in the State of Iowa, seemed to be established.

We regret to announce the death last Tuesday of Dr. Henry Jasper Cardale, chairman from its inception of the London Panel Committee.

On Thursday, April 30th, Prof. W. W. C. Topley, F.R.S., will give the first of the five William Withering lectures, on the chemical and biological aspects of immunology, which he and Mr. Percival Hartley, D.Sc., are delivering at the University of Birmingham. Prof. Topley will also lecture on May 14th and 28th, and Dr. Hartley on May 7th and 21st. All the lectures will be at 4 P.M., and members of the medical profession and students are invited to attend.

[1] Jeans, P. C., and Zentmire, Z.: Jour. Amer. Med. Assoc., March 21st, 1936, p. 996.

PROGNOSIS

A Series of Signed Articles contributed by invitation

XCVIII.
PROGNOSIS IN FOOD POISONING

SINCE food poisoning is not a definite entity and hardly a definable conception it is only possible to discuss prognosis in the light of the different types of causation.

Poisoning by Chemical Substances

The chief mineral salts which give rise to poisoning are those containing lead, arsenic, antimony, zinc, copper, and tin. As regards symptoms they mostly fall into two groups. In one there is continued absorption of small quantities of the toxic metal, such as may occur with lead poisoning associated with beer or cider contaminated with lead. The prognosis has to take into account the risk of damage to vital organs such as the kidneys, this being more important than risk to life, although deaths have occurred in such outbreaks. The two main considerations are the dosage and whether the substance exerts a cumulative effect.

Poisoning associated with the ingestion of *arsenic* is naturally always serious both from secondary effects and risk to life. In the Manchester outbreak of arsenical poisoning from beer there were at least 6000 persons attacked and over 70 deaths were recorded. When the toxic substance is an acute gastro-intestinal irritant, as occurs for example with lemonade made in vessels treated with a soluble antimony salt, or with an acid fruit acting upon zinc retainers, the dose ingested sets up diarrhœa and vomiting and may be alarming from the prostration caused, but the symptoms are of limited duration and deaths are practically unknown, while no late harmful results are to be anticipated as there is no absorption of the mineral.

Occasionally rare types of widespread chemical poisoning occur. One of the most extensive was that due to the use of adulterated extract of Jamaica ginger, mostly in U.S.A. in 1930, involving some 15,000 cases, the toxic agent being tri-ortho-cresol. The actual case-mortality was not ascertained, but it was high, while the late effects were disastrous, resulting in extensive atrophy of muscles and nerves. Recovery when it did occur took from one to two years.

Alkaloidal poisoning may occur. This may be accidental, as when belladonna plant is mixed in with sage by mistake for stuffing. The prognosis depends on the dose and the rapidity of efficient treatment. Allied is mushroom poisoning, and the most important factor affecting prognosis is the species of mushroom and to a lesser extent the dose. With *Amanita phalloides* the mortality-rate is at least 50 per cent.; with *Amanita muscaria* recovery is usually rapid and complete and deaths are comparatively rare. Poisoning with *Helvella esculenta*, although it gives rise to jaundice and late hæmoglobinuria, has a low mortality-rate.

Another peculiar type of food poisoning with a considerable mortality is from *mussels* which have become poisonous from causes not yet completely understood. The most extensive recent outbreak which has been investigated is that on the Pacific coast of California in 1927 with 102 known cases and 6 deaths. The poisonous substance was a toxin of non-bacterial origin.

In general, prognosis depends upon the nature of the toxic agent, modified by the amount ingested and the promptness and efficiency of treatment.

Bacteria which Produce Gastro-intestinal Irritation

The commonest type in this country is due to various members of the salmonella group. Those members which cause food poisoning act as gastro-intestinal irritants and produce toxins which cause severe diarrhœa, vomiting, and prostration. They act therefore as cleansers of the alimentary tract so that apart from treatment recovery after a few days is usual. The actual mortality-rate is low, only 1·2 to 1·3 per cent.

The interesting point as regards prognosis, even when the living bacillus is introduced, is that the usual course is purely the action of a gastro-intestinal irritant, without any circulation of the bacillus in the blood stream. Direct blood examinations are invariably negative even when the organism is very abundant in the fæces. In this they differ widely from paratyphoid fever (also due to a salmonella strain). On the other hand, in all fatal cases of salmonella food poisoning it is quite easy to recover the bacilli from the spleen, liver, and other internal organs. These facts suggest that the usual course in salmonella food poisoning is for the bacilli to be restricted to the alimentary tract and as such involves a very small risk to life, but should they establish a parenteral infection and set up a septicæmia there is grave risk of the case terminating fatally. Apart from this risk, which mortality figures show is not great, there may be long-continued prostration without permanent ill-effects.

Another group of food-poisoning cases have been shown within the past few years to be due to toxins produced by staphylococci and in rarer instances to streptococci. So far nearly all the recorded outbreaks have been in America. The poison here is an enterotoxin, is effective in filtered sterile cultures, and is only produced under certain conditions, not yet fully understood. The poisons act as gastro-intestinal irritants usually comparatively mild in character so that the symptoms are not severe and complete recovery always occurs.

Another important group, because fairly common, is one in which the poisoning is entirely associated with bacterial toxins without the presence of any living bacilli. There is no unanimity of opinion as to the bacterial source of the toxins, the evidence that they are associated with salmonella strains not being accepted by all workers. Whatever their nature they are a characteristic group of importance from the point of view of prognosis. The toxins being preformed, and all present at once, the symptoms are often very abrupt in origin, very severe in character, and sometimes alarming. The patients think they are going to die, but never do unless at the extremes of life or debilitated from disease. They rapidly and completely recover, apart from anything much in the way of treatment. The actual case-mortality from a large series is about 0·5 per cent.

Bacterial Poisons Acting Mainly on the Nervous System

The only food poisoning of this type is botulism. Here the fatality-rate is exceedingly high, between

60 and 70 per cent. In the Loch Maree outbreak all the 8 persons who took out and ate the wild duck paste sandwiches died. With such a high mortality it is of value to consider the factors which make for a lower rate. In man the cases may be caused either by type A or type B *Cl. botulinum*, but the toxins are of equal potency. The condition is one of intoxication not a bacterial infection, so the amount of ingested toxin is the primary factor and dosage is important. Like *B. diphtheriæ* the organism produces a true toxin outside the bacterial cell and the antitoxin is equally effective. The two types produce different toxins, and the antitoxins are specific and are useful only for the same type. There is not time to type the organism even if it can be isolated, so a polyvalent antitoxin must be used, preferably injected intravenously. Animal experiments demonstrate its marked efficiency if given at the time or soon after the ingestion of the toxin; it is of little or no value if delayed long after the onset of the first symptoms. It must be available, polyvalent, and given *early*. Unfortunately these conditions are difficult to meet and this makes the prognosis bad. No other treatment seems to be of any use. The two factors affecting prognosis are the amount of the dose ingested (and this is not important in practice because the poison is so toxic) and the promptness of diagnosis with effective antitoxin treatment.

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SPECIAL ARTICLES

A PROGRAMME FOR NUTRITION SURVEYS

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CONSIDERABLE discussion has taken place recently as to the most suitable formula to be used in the assessment of malnutrition, as based on measurements of physique (that is, on data for weight, height, and/or age).[1] Some workers have urged the desirability of substituting measurements of physical performance for those of physical development.[2] Others again would rely more exclusively on clinical appearance.[3]

It is apparent, however, that all these methods have serious limitations. In the first place they may easily fail to detect the earlier and less obvious stages of undernutrition. Secondly they may give inadequate information about the specific nature of the deficiency or deficiencies in question—more especially when the deficiency is partial or moderate only.

The above criticisms may at first sight seem rather sweeping, but one may illustrate their truth by reference to the results of a number of recent inquiries in which the incidence of undernutrition has been determined by more specific methods.

The observations of Helen Mackay on the prevalence of nutritional anæmia may be chosen as the first example. She observed [4] that 70 per cent. of a group of poor-class bottle-fed babies in London suffered from some degree of nutritional anæmia; the deficiency was associated with an increased morbidity-rate, so that when the anæmia was cured by provision of extra iron the morbidity-rate was duly diminished. A similar high incidence of anæmia has been observed elsewhere—e.g., for mothers at Aberdeen [5] and at London.[6] The important point to realise is that this specific evidence of malnutrition was detected only after laboratory test, and that reliance on the more cursory clinical methods or on "weight ratios" would have failed to reveal unmistakably the presence of undernutrition in most of these individuals.

As a further example, the figures relating to the incidence of rickets may be mentioned. According to official statistics in 1928, 87 per cent. of a group of 1635 five-year-old London school-children [7] were found after special examination to show evidence of "some degree of rickets"; yet in the great majority of cases their nutrition would have been returned as "normal" by the ordinary school medical examination.

Finally the experiments of Corry Mann may be alluded to. Carefully controlled experimental observations by this worker [8] and by many others subsequently [9] have shown conclusively that for optimum development and health a school child needs not less than one pint of milk per day. Yet, although large sections of the population are unable to receive their daily pint, examination by the school medical service—which under existing conditions must frequently be somewhat cursory—is generally incapable of revealing such degrees of sub-optimum nutrition.

It is considerations such as the foregoing which indeed form the justification for basing estimates of malnutrition (or undernutrition) not so much on existing public health returns as on a knowledge of the amount of money actually available for food for given groups of the population. When the amount of money available is less than that which expert opinion [10] considers to be the minimum necessary for the maintenance of health, then a presumption must be raised that some degree of undernutrition is present. Orr [11] calculated in 1934 that no less than 10,000,000 individuals in this country were unable to afford even the bare minimum figure (at the present time perhaps 20,000,000, representing 40 per cent. of the population, are considered to have diets below the *optimum* [11a]).

To sum up the foregoing arguments, it may be said that three principal objections can be raised to attempts to assess undernutrition by methods based solely on physique, on physical performance, or on superficial clinical appearance. These objections are: (1) the absence of standards of reference, (2) that such standards as do exist may be debased standards, and (3) that the worst and more obvious of the effects of undernutrition may be delayed.

(1) *Absence of standards.*—The difficulties due to absence of standards are at once apparent from statistics such as the following: In comparable areas in Northumberland (as Dr. J. C. Spence has pointed out [12]) the official returns for malnutrition may vary from 0·5 per cent. to 7·5 per cent.! At Bootle the malnutrition-rate is given as 12 times that of Liverpool—of which it is a suburb. Or, again a prosperous borough like Twickenham owns to a malnutrition-rate six times that of Wigan.

(2) As to the use of *debased standards*, it is sufficient to say that large numbers of returns are based on *past averages* instead of possible optimal figures, and it is often overlooked that there has been a steady improvement in height and weight values for elementary school-children in many parts of the country during the past decade or two; while in controlled experiments in which children have been allowed more generous dietaries their weights and heights have shown considerable advances over the

old average figures, which are still too often taken as "normal" values. No doubt the ideal standards for weights and heights under conditions of optimum nutrition have still to be determined.

(3) As to the difficulty of recognising the milder or earlier stages of malnutrition enough has already been said to show that disorders such as nutritional anæmia, mild or early rickets, and sub-scurvy, may be the cause of definite ill-health and lead to still more serious defects in later life and may yet escape notice unless special methods are used for their detection.

A consideration of these facts leads me to suggest that the time is ripe to draw up a schedule of the tests which are now available for the determination of specific nutritional deficiencies. It is greatly to be hoped that a series of surveys employing such methods of test should be undertaken (on random specimens of the population) in different areas, so that a conspectus may be obtained of the incidence of definite defects of nutrition throughout the country.

Tests for Specific Deficiencies

VITAMIN A

(*a*) *Photometer test* (Jeans and Zentmire).—The most sensitive method so far proposed for the detection of vitamin-A subnutrition is based on sensitivity to light following partial dark adaptation. The principle of the technique depends on the well-known fact that visual purple is a compound of vitamin A, and that in the absence of an optimum dietary allowance of the vitamin the rate of regeneration of the visual purple is subnormal. As a check on the accuracy of the method, those subjects showing low values should be given an adequate source of vitamin A for a week or two, and if such treatment is found to be duly followed by a return to a normal visual value, it may be reasonably held to confirm the conclusion that vitamin-A deficiency was the cause of the defect.

Using this method Jeans and Zentmire [13] found that in a group of 213 children from Iowa City, U.S.A., whom they examined, no less than 45 had subnormal dark adaptation. Of the latter, a group of 21 were treated as controls with cod-liver oil, and were then found to return to normal in an average period of 12 days. The subjects chosen for investigation were, it is true, a group of physically afflicted children from the lower economic classes, but it is significant that as many as 21 per cent. were found to have some degree of vitamin-A deficiency.

(*b*) *Post-mortem determinations of liver reserves.*—Some indication of the variations in the vitamin-A reserves in different sections of the population may be obtained from post-mortem analyses of the liver (carried out by means of a colorimetric test, by the $SbCl_3$ method). The vitamin-A reserves of the body are known to be stored almost entirely in the liver, and the amount so stored depends on that provided in the diet. For the sake of more accurate comparison, accident or surgical cases are best taken, since in medical cases the possible provision of a diet rich in vitamin A since admission to hospital may sometimes give a figure deceptively higher than that truly representative of the previous home conditions. Absolute standards of "normality" for the liver reserves are not yet known, so that results must be given a general qualitative significance rather than a strict quantitative interpretation. The most comprehensive results so far published are due to Moore,[14] and he gives the provisional finding that about 16 per cent. of cases show "subnormal" vitamin-A reserves. For purposes of calculation it may be borne in mind that the minimum daily dose of vitamin A needed by a man, woman, or child is thought [15] to be in the region of 1000 "Sherman-Munsell rat units" (= about 1400 international units) per day.

VITAMIN B_1*

Urinary excretion test.—A method has just been described (Harris and Leong) [16] by which the amount of vitamin B_1 excreted in the urine may be used as an index of the dietary intake. Large-scale surveys have still to be undertaken, but as a provisional guide it may be held that subjects excreting less than 12 I.U. (international units) per day (for a ten-stone man) and failing to show a response to a single test dose of (say) 500 I.U. have been receiving a diet unduly low in vitamin B_1. The significance of a suboptimal intake of vitamin B_1 in nutrition may be seen from the results of various workers who have shown that the weight and height gains of children were considerably improved beyond those of the controls when extra vitamin B_1 (or B) was added to the diet (mainly in the form of cereal preparations).[17]

VITAMIN C

(*a*) *The urinary excretion test* depends on the fact that the amount of vitamin C excreted daily in human urine and the response to a test dose depend on the past intake [19 20]: the measurements are made by a simple chemical titration, depending on reduction of the redox dye, 2 : 6-dichlorophenolindophenol under specified conditions. A considerable amount of quantitative work has already been done. It has been shown [20] that if less than a certain amount of specific reducing substance (expressed as ascorbic acid) is excreted daily (viz., 1·0 to 1·5 mg. per stone of body-weight) and if there is no response to a given test dose (viz., 70 mg. per stone of body-weight), a presumption must be raised that the diet of the subject has contained less than the reputed minimal-optimum dose of vitamin C [21] (e.g., 25 mg. per day for an adult).† A survey of subjects of the voluntary hospital class, recently concluded,[22] indicates that a suboptimal intake of vitamin C is indeed of common occurrence. It has similarly been pointed out that although current teaching recommends the consumption of orange juice daily by all bottle-fed babies, many do in fact receive too little—a conclusion confirmed by tests carried out on the urine.[20]

(*b*) *Capillary resistance test* (Göthlin).—An alternative method described by Göthlin [23] depends on the fact that with inadequate intake of vitamin C the capillary resistance becomes subnormal. This is apparently the earliest clinical symptom of sub-scurvy. As measured by Göthlin's method, a count

* *Vitamin-B_2 complex.*—The significance of the various components of the vitamin-B, complex in human nutrition is not yet sufficiently well understood to warrant any detailed consideration here. The following points may be worthy of note however:—

Lactoflavin is excreted in the urine, and apparently in amounts depending on the dietary consumption, and it may be estimated readily by a fluoroscope test; but until more is known of the physiological rôle of lactoflavin and the effects of its deficiency, such tests are outside the scope of our present discussion.

Vitamin B_4, the so-called rat-pellagra factor,[18] is also of unknown significance for human nutrition, and no methods of test for its deficiency in man are known.

The pellagra-preventing (PP) factor, although it has not yet been chemically identified, is of importance in many regions of the globe—e.g., over 7000 deaths per annum from pellagra occurred in the U.S.A. in 1928–30, according to official returns. Unfortunately no tests seem yet available for subclinical degrees of deficiency.

† This is approximately the amount said to be needed to restore to normal a diminished capillary resistance due to hypovitaminosis C: see below.

is made of the number of petechiæ which appear in a given area on the surface of the arm when a stated pressure is applied by means of a tourniquet. The objection which may be raised, that a diminished capillary resistance is not pathognomonic for scurvy but is seen in other conditions also, is largely met by a procedure described by Göthlin,[24] according to which whenever a low value is found a source of vitamin C may be administered and a return to a normal value in the course of a week or two confirms the diagnosis. By this method Göthlin[24] found that in Norrland (in Northern Scandinavia) one child out of every five gave evidence of hypovitaminosis C.

VITAMIN D

(*a*) *Blood phosphatase test for* active *rickets.*—Probably the most sensitive test for detecting active or current rickets is based on a measurement of the amount of phosphatase in the blood, as described by Smith.[25] With the start of the rachitic process the phosphatase content of the blood rises above normal, and promptly sinks again once the curative action has begun. The laboratory estimation is fairly straightforward, and should be made the subject of surveys on a larger scale.

(*b*) *Examination for* past *rickets.*—As it is important to know not only whether the rachitic process is active at the moment when the test is carried out but also whether there is a history of rickets, an examination should be included for the stigmata of past rickets. The methods used (see for example the London inquiry of 1928 [7]) are simple and well known; X ray investigation should be combined with examination for enlarged epiphyses and characteristic bony deformities (the Newman Committee of 1931 accepted the following [26] as "rachitic signs": parietal bossing, frontal bossing, radial epiphyses, spinal curvature, knock knees, bow legs, bowing of tibia, beaded ribs, changes in chest wall).

IRON (NUTRITIONAL ANÆMIA)

The striking results of Mackay and others [27] on the high incidence of nutritional anæmia, and of the damage which it causes to health, have already been alluded to. When the laboratory method for its detection is so relatively simple, there is every reason why it should be included in nutritional surveys of the kind we have in mind.

OTHER ESSENTIALS

The above list, while making no claim to completeness, probably does summarise the tests which are most easily carried out.

Evidence of a deficient intake of other important dietary constituents, such as protein, or calcium, or phosphate is more readily determined by a direct study of the budget and of the food actually consumed by the members of the family—rather than by the necessarily complex procedure of estimation of "retention" in "balance" experiments. The latter kind of inquiry has, it is true, given invaluable information in a few well-chosen surveys which have been carried out, mainly in the hands of Sherman and his co-workers in America. Such tests are, however, generally beyond the scope of ordinary routine inquiries. An exception might, perhaps, sometimes be made for blood analysis for calcium and inorganic phosphate, a low phosphate (or low Ca × P product) being nearly always indicative of a rachitic process. Similarly, hypocalcæmia, giving rise to spasmophilia, may be detected by diminished resistance, on test, to electrical stimulus.

Summary

Limitations in the method of assessing undernutrition by means of observations based on the superficial clinical appearance, on physique, or on physical performance are: (1) the absence of standards of reference, (2) that such standards as are in use may be debased, (3) that the more obvious ill-effects of undernutrition may be delayed, and (4) that such methods may fail to indicate the specific nature of the deficiencies responsible. The following methods, inter alia, are now available for the determination of specific deficiencies.

(1) *Vitamin A.*—(*a*) Photometer test for dark adaptation (visual-purple formation). (*b*) Post-mortem estimates of vitamin-A reserves in liver.

(2) *Vitamin* B_1.—Urinary excretion test.

(3) *Vitamin C.*—(*a*) Urinary excretion test. (*b*) Test for diminished capillary resistance.

(4) *Vitamin D.*—(*a*) Phosphatase test for active rickets. (*b*) X ray and clinical examination (bony deformities) for past rickets.

(5) *Iron* (nutritional anæmia).—Hæmoglobin estimations.

Surveys are required based on the collection of such data.

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CENTRAL JUBILEE FUND.—A grant of 50,000 rupees (about £3500) from this fund is to be spent by the Ludhiana Women's Christian Medical College, a hospital in the Punjab, on radium. The college, which was founded by Dame Edith Brown, M.D., 42 years ago, was the first medical school for training Indian women. It now has in training 150 medical students, 50 nurses, 20 compounders, and 80 dais. It is supported partly by Government grants and partly by British and American missionary organisations.

MEDICINE AND THE LAW

Claim for Negligence against Surgeon and County Council

Mr. Justice Finlay has an important judgment to deliver in the present legal sittings in the action brought by Mrs. Dryden against Dr. John Stewart and the Surrey County Council. The plaintiff claims damages for alleged negligent treatment during and after an operation performed at the Epsom Hospital in November, 1934. She alleges that surgical packing was inserted after the operation and that no proper precaution was taken for its removal. It is her case that the packing must have been inserted under an anæsthetic when the doctor was in charge; if inserted by a nurse, it could not have been done without the doctor's knowledge. Against the defendant county council she complains that her symptoms were not properly reported to the doctors in charge: she says she was discharged from the hospital as recovered when she was really a very sick woman, and that in consequence she developed pyelitis and cystitis and suffered pain and that this trouble was likely to recur at any future pregnancy. The case was opened at the Surrey assizes and adjourned to the High Court in London. The defence is a denial of the alleged negligence. Dr. Stewart says he is certain he left no swab at the time of the operation; if any packing or plugging had been used, the fact would have been noted on the patient's bed card. The county council says it is not called upon to explain the presence of the packing: it denies that the hospital nurses were negligent, and it contends that the nurses were not, when taking part in the operation, the servants of the hospital; the hospital and the nurses did not stand in the relative position of master and servant; the hospital could not tell the nurses how to do their duties. On the other hand, the plaintiff's counsel has asserted that this legal rule, whereby a hospital is not liable for the negligence of its skilled staff, is based on the view that the services of the hospital are gratuitous. He says it could not be argued that a nursing-home (where patients are paid for) is not responsible for the negligence of its staff. As 30*s*. per week were paid for Mrs. Dryden at the Epsom Hospital, it is contended by her counsel that she is in the same position as if she had paid 20 guineas a week in a nursing-home. It will thus be seen that the judgment which Mr. Justice Finlay is to deliver as soon as possible after the Easter vacation promises to be full of interest to the medical profession and to hospitals.

Poor Prisoners and Their Witnesses

In commenting on the proceedings against Mrs. Harding (THE LANCET, April 11th, p. 860) where fresh medical evidence was admitted in the Court of Criminal Appeal with the result that her conviction was quashed, we suggested that it was strange that the evidence was not available at the trial. When this fresh evidence was tendered, her counsel apparently explained its previous absence by stating that she was defended under the Poor Prisoners' Defence Act. A correspondent has written to point out that, if Mrs. Harding's counsel was briefed from the dock, he deserves all possible credit for having ultimately obtained the necessary evidence and for having successfully submitted it to the appellate tribunal. Nobody will wish to belittle the advocate's unselfish work or the intervention of the medical witness whose official position happily gave him an opportunity to serve the cause of justice. Exactly what happened in the appointment of a barrister to defend Mrs. Harding is not quite clear. A "dock defence" is the name usually given to the direct instruction of counsel by an accused person. There is an ancient forensic convention that anybody who is tried on a criminal charge can produce a guinea and claim to be defended by any barrister who is present in court and is not engaged for the prosecution. This is one of the exceptional cases where a lay client can instruct a barrister directly without the intervention of a solicitor. It naturally follows that there is scant opportunity for obtaining witnesses, since the barrister is acting on the spur of the moment and since it is not the province of a barrister but of a solicitor to seek out and mobilise prospective witnesses. Another method of extempore defence is illustrated when the judge asks some barrister in court to undertake the defence of an undefended prisoner. This the judge will do if he sees a possible line of defence; it is a chance for a young barrister to show his paces, and his services are given gratuitously. These two methods existed long before the Poor Prisoners' Defence Act was passed. The statute has made a twofold difference: in the first place both solicitor and counsel can be assigned and will receive a prescribed fee; secondly, since the solicitor is assigned in advance of the trial, there should be no difficulty in securing the attendance of necessary witnesses.

Coroner on Medical Errors

Dr. R. L. Guthrie, the East London coroner, recently observed that, if every doctor was to blame for every mistake, medical practice would be impossible. He was completing an adjourned inquest on a patient who had undergone an operation for appendicitis but whose appendix was found to be free from disease. It was clear that the surgeon had examined the patient with all proper care; a medical witness said he considered the operation necessary "even in the light of after events." The surgeon was exonerated from blame and a verdict of "death by misadventure" was recorded. Dr. Guthrie's observation is a useful reminder that medical science makes no pretence to the exactness of the multiplication table and that there is certainly no liability in criminal negligence for a mistaken diagnosis, made after a reasonably careful examination of the conditions, if the resultant treatment should unhappily end fatally.

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

A NEW SURGEON-GENERAL

Dr. H. S. Cumming having recently resigned as surgeon-general of the U.S. Public Health Service on grounds of ill-health, after a long and most distinguished career, President Roosevelt named Dr. Thomas Parran, Jr., to succeed him. A few days later this appointment was ratified by the senate and Dr. Parran was getting ready to leave Albany for Washington. He will be the youngest surgeon-general in the history of the service. He was born at St. Leonard, Maryland, in 1892 in a house built of English bricks; one of his ancestors brought these bricks across the Atlantic as ballast for a tobacco ship. After a successful career in the public health service Dr. Parran was appointed commissioner of health for New York State. That was in 1930 when

Franklin D. Roosevelt was governor. Last autumn in Milwaukee Dr. Parran became president-elect of the American Public Health Association. Dr. Parran holds somewhat advanced views on public health, and especially on what we call "socialised medicine." Members of the medical profession will watch with some anxiety to see what influence these views will have in shaping the policies of the public health service. Science Service news agency announces that Dr. Parran's programme has been summarised by himself as follows:—

1. To finish the job of wiping out tuberculosis.
2. To wipe out . . . syphilis, the end-results of which "crowd our jails, our poor-houses and our insane asylums."
3. To make available to people everywhere facilities for the proper diagnosis and treatment of cancer. . . .
4. To reduce the "disgracefully high" death-rates of mothers in childbirth and babies in the first month of their lives.
5. To correct the conditions resulting from improper diet.
6. To restore crippled children to lives of usefulness.

Dr. Parran visited Sweden last summer and came back deeply impressed with the success of that country's campaign to control syphilis. When he was refused permission to use the word syphilis even in the most general connotation in a radio address he resigned from the committee for education by radio.

PARIS

(FROM OUR OWN CORRESPONDENT)

SOME VENEREAL DISEASE STATISTICS

WHEN due allowance is made for the wide gulf between statistics and veracity, it is possible to glean interesting and sometimes instructive information from them. The Union des Caisses d'Assurances Sociales of Paris has recently issued a study of the incidence of, and campaign against, venereal disease in France. It appears that as many as 20 per cent. of men suffering from syphilis are aged 30–40, and only 5 per cent. aged 50–55; in other words, syphilis is pre-eminently a disease of the best working age. The same authority estimates that 10 per cent. of all cases of invalidism can be traced to syphilis. Still more arresting are the figures quoted by Dr. Cavaillon and Dr. Dufour in an appendix to this study. They calculate that, every year in France, syphilis causes 20,000 deaths between the sixth month of intra-uterine life and the third month of infancy. It prevents the birth of 40,000 infants every year, causes 80,000 deaths, and costs 140,000 human lives, even when no account is taken of the degenerate, the blind, the deaf-mutes, the paralytic, the ataxic, &c. What is perhaps the most startling statement of all is that 40 per cent. of the diseases for which treatment is given in hospital are venereal. Insanity costs France more than 200 million francs a year, and a quarter is attributed to syphilis. In 1916 a veritable epidemic of syphilis was a source of grave concern to the French public health authorities. Since then, the defensive reaction has been so effective that, at the beginning of 1936, the country was equipped with 1821 venereal disease services, not including the services attached to hospitals and certain dispensaries. Thanks to the activities of these centres, neurosyphilis has been reduced to such an extent that tabes is ten times less common than it was before the war. It is a curious and not altogether satisfactory observation that the care of venereal disease patients is shared by well equipped, more or less public, services and unscrupulous quacks. The general practitioner is out of the picture.

A FRENCH MEDICAL DEFENCE UNION

The Ligue Médicale de Défense Professionnelle, commonly and affectionately known as "Sou Médical," is very much of a going concern. It is affiliated to the weekly journal, *Concours Médical*, in the sense that you wash one hand with the other. Between 1926 and 1933 the average number of new members per year was 394; in 1935 they numbered 739. At the end of 1925 there were 4500 members, and at the present time there are 7273. A list of the cases dealt with shows that the recovery of medical fees is the sphere in which the aid of his defence union is most often invoked, and there is an increasing proportion arising out of accidents—road and occupational. Differences of opinion between doctors and tax collectors also seem to be common. The material resources of Sou Médical amount to more than two million francs; this backing helps it to insure its members, who pay 100 francs a year, for 100,000 francs against the risk of "la responsabilité civile," a term which even courageous linguists shirk translating. When a member pays 150 francs a year, he not only becomes a reader of, or at any rate a subscriber to, *Concours Médical*, but he has his aforementioned risk covered to the tune of 500,000 francs. With its six lawyers and experts in other fields, Sou Médical is in a position to render much useful service at a very moderate charge.

LOUIS HENRI VAQUEZ

The death is announced of Prof. Vaquez on April 15th at his home in Paris. Born in 1860, he had a distinguished medical career and he enjoyed an international reputation as a specialist in diseases of the heart. To many his name will be familiar in connexion with the instruments he devised for measuring the blood pressure. He was a professor of the faculty of medicine of Paris, a member of the Academy of Medicine, and an officer of the Legion of Honour.

IRELAND

(FROM OUR OWN CORRESPONDENT)

COMPULSORY RETIREMENT OF OFFICERS OF LOCAL AUTHORITIES

AT the last meeting of the joint committee of the Grangegorman and Portrane mental hospitals, a resolution was passed which stated: "That, in compliance with the instructions of the Minister for Local Government and Public Health as set forth therein, all established officers aged 65 years and upwards now eligible for full or partial superannuation under the 1890 or 1909 Superannuation Acts be requested to submit their resignations and applications for superannuation at the next monthly meeting." The action of the committee is an example of the confusion into which local authorities throughout the country have been led by the lack of clarity in the circular issued some weeks ago by the Minister for Local Government and Public Health. Local authorities still persist in regarding the circular as mandatory despite the Minister's repudiation of such an interpretation. On March 12th in the Dáil he

stated that no Order had been made, and on March 24th he repeated this statement explicitly: "The circular letter is by way of recommendation to local authorities; it is not an order." He further stated that the local authorities had powers enabling them to take the action recommended in the circular, but he was silent when questioned for the statutory reference to such powers. The possession of such powers is widely questioned, and it has been stated in the daily press that the Local Government Officials' Association—a body representative of the officers of local authorities—has obtained opinion of senior counsel that no such power resides in the local authorities. The council of the Irish Free State Medical Union has advised its members who might be adversely affected if the recommendations of the circular were carried out to take no step toward resigning at present.

MR. HENRY S. MEADE

The French Government has conferred on Mr. Henry S. Meade the rank of Chevalier de la Légion d'Honneur. Mr. Meade, who is one of the surgeons to St. Vincent's Hospital, Dublin, worked as a surgeon for a considerable time in French hospitals during the late war.

FOTHERGILL TESTIMONIAL FUND

THE following is the fifth list of subscribers to the testimonial to Dr. E. Rowland Fothergill received in response to the letter published in the *British Medical Journal* and *The Lancet* of Jan. 18th:—

Amount previously acknowledged, £1361 12*s*.
R. L. Newell (Manchester), £2 2*s*.; Carnarvonshire Panel Committee, £5 5*s*.; E. R. Sweeney (London), 10*s*. 6*d*.; J. P. Davie (Chesterfield) and H. Downer (Hove), each £1 1*s*.; Bedfordshire Local Medical and Panel Committee, £21; Carmarthenshire Panel Committee, £5 5*s*.; Portsmouth Panel Committee, £13 8*s*.; Northampton Panel Committee, £2 2*s*.; Glamorgan Panel Committee, £10 10*s*.; C. J. Marsh (Yeovil) and A. T. Jones (Mountain Ash), each £1 1*s*.; J. Macfayden (Newcastle-on-Tyne), £1; F. A. L'E. Burges (Birmingham), £2 2*s*.; Sir Thomas Dunhill (London), £3 3*s*.; F. H. Alexander (Littlehampton), H. Child (Brighton), —, Marshall, F. Hinds (Worthing), N. E. Chadwick (Hove), D. D. Macintosh (Worthing), W. N. Maple (Hove), Nora Crow (Brighton), A. Barnes, Sir Hubert Bond (Brighton), A. E. Cawston (Lewes), J. V. Banner (Brighton), W. A. Wood (Brighton), and Roderick Clapham (Hove), £27 9*s*. 6*d*.; W. P. S. Branson (Frimley Green), £2 2*s*.; B. R. Rygate (London), 10*s*.; C. F. T. Scott and W. Paterson (Willesden), each £1 1*s*.; Adam Fulton (Harrogate), £2 10*s*. Total £1466 17*s*.

It has been decided that the fund will be closed at the end of May and it is hoped, therefore, that any intending subscribers will forward before that date their contribution to the treasurer, Fothergill Testimonial Fund, British Medical Association, B.M.A. House, Tavistock-square, London, W.C.1.

PANEL AND CONTRACT PRACTICE

Test Prescriptions

A PRACTITIONER in the Home Counties was asked to write a test prescription and did so, under protest, in such a way as to make it clear to any chemist to whom it might be presented that it was a test prescription. Approached in turn by the insurance and the panel committee he relented to the extent of saying he would be prepared to issue an amended prescription, but he was adamant in his intention to inform the local chemists that he was issuing it. His attitude is accordingly being investigated by the medical service subcommittee. During the discussion a medical member of the committee imputed to the sponsor of the Act the statement that the dispensing of medicines by chemists was designed to secure that doctors should not give their patients "bad drugs," but it now appeared that an elaborate intelligence system was necessary to ensure this. If there had to be a system of tests it should, he thought, be an efficient one. He seems to have been unaware that the schemes for testing drugs and appliances supplied to insured persons are designed simply to check the accuracy with which they are dispensed. Under their terms of service the drugs and appliances which chemists supply must be of a grade or quality not lower than that specified in the Drug Tariff, which is almost invariably that of the B.P. or its codex. If not included in it they must be of a grade or quality not lower than that ordinarily used for medical purposes. Inspectors under the Food and Drugs Acts see that drugs are of a proper degree of purity. In the early days of the testing scheme, before the issue of test prescriptions was made part of the practitioner's terms of service, the protestant would prescribe for Mr. B. Ware, Mr. O. B. Careful, or Mr. A. Test.

Secrecy of Records

There has been some concern about the possible leakage of information on forms of medical record. The instructions to insurance committees lay it down that the obligation laid on them to maintain strict secrecy as to the information in their possession extends generally to all information, of any kind whatever (including names and addresses), about all classes of insured persons and their dependants, which may come into the possession of the committee, its members, and officials in their official capacity. Even when application is made by the police for information as to the addresses of insured persons, the foregoing instructions are sufficiently explicit to warrant the refusal of information. In cases where the entries on a record card are likely to be of assistance to the investigation of a question by the medical service subcommittee, it is the practice to secure the consent of the insured person to the production of the medical record before it is even examined by the subcommittee.

Grubby Envelopes

An insurance doctor had employed a surgery attendant who for many years had been in the habit of taking the medical records from the file as patients arrived so that each patient on passing into the consulting-room could himself hand the F.M.R. to the doctor or his assistant. After surgery hours the attendant would restore the records to the cabinet, but naturally over a period of years some of the envelopes became dirty. Recently the doctor appointed a new surgery attendant who developed pulmonary tuberculosis. The doctor pointed out to the insurance committee that it was difficult effectively to disinfect and clean the envelope records and asked for duplicate envelope records to which he might transfer the notes. The committee consulted the Department, who took the view that, in the special circumstances, if in the case of such records as the doctor considered should be renewed he would enter on the back of a new envelope a brief summary of the essential facts of the medical history, as indicated by the clinical notes on the old envelope, the latter might then be destroyed. No notes other than this summary should be made on the fresh envelope; particulars of further illnesses, for instance, should be recorded on continuation cards. Medical records have now been in existence since January, 1921, and the condition of some of them, especially where handled by the insured persons themselves, is certainly not hygienic. Other practitioners will be considering the desirability of substituting a clean new record where the condition of the existing record is unsatisfactory.

CORRESPONDENCE

PLACENTAL EXTRACT IN MEASLES

To the Editor of THE LANCET

SIR,—Several references have appeared in our medical journals, following observations reported in the American literature by McKhann and Chu and others, to the use of a new reagent for passive immunisation in measles. This reagent, known as placental extract or immune globulin (measles), has awakened wide interest, and I have received many inquiries from practitioners and medical officers of health as to its value in prevention and attenuation in measles. Through the foresight and courtesy of my laboratory and administrative colleagues in the London County Council, and Dr. Petrie of the Lister Institute, I have been able to try three samples of this reagent. As will be seen from the following the results have been favourable, and in view of the importance of the subject I have thought it desirable to give some details of these preliminary experiments.

The first step was to demonstrate if possible the fact that placental extract does in fact contain measles antibody, and an attempt was made to produce the immunity reaction of Ravina and Debrè. Convalescent measles serum and placental extract were accordingly injected at separate sites intracutaneously in 0·2 c.cm. amounts into the skin of a patient in the early prodromal stage of measles. On the rash appearing three days later it was inhibited over the area of skin infiltrated by the two reagents. The convalescent serum area was however about twice as large as that produced by the placental extract, and the inhibition of the rash was complete, whereas with the placental extract, although the area of inhibition was quite distinct it was not quite complete in that there were faint traces of rash.

Having thus proved that the extract contained measles antibody, comparative passive immunisation experiments were carried out when opportunity arose as a result of measles cross-infection in various wards. In each ward outbreak the exposed susceptibles were divided into two groups of approximately equal number and similar age-distribution. One group received 5 c.cm. convalescent measles serum and the other varying doses of placental extract. The day of exposure varied from one to five days, but in only one outbreak was complete protection obtained with both reagents, whilst in another complete protection was obtained in the convalescent serum group but not with placental extract. Otherwise the occurrence of mild or modified cases was fairly equally distributed according to the numbers in the groups and the type of reagent. In all 69 children received injections, 35 receiving convalescent measles serum and 34 placental extract. In the convalescent serum group 7 contracted modified measles, and in the placental extract group 7 contracted modified measles and 3 mild measles. All cases were uncomplicated with one exception in the placental extract group, a child of two years suffering from severe whooping-cough developing double otitis media ten days after the onset of mild measles. Reactions after injection of placental extract consisted in a flicker of temperature to 99° or 100° F. the day after injection in most cases, whilst one case showed an erythematous rash a week later. The dosage employed with two of the extracts was 10 c.cm. and 3 c.cm. respectively, the dosage recommended by the laboratory of origin, whilst the third extract was employed in double the doze—viz., 4 c.cm. My results are insufficiently numerous to lend themselves to analysis from this point of view, and in any case the dosage must vary with the degree to which the laboratory worker feels justified in concentrating his product.

From these results it would appear that in placental extract we have a reagent available for passive immunisation in measles, less potent perhaps than convalescent measles serum, but at least equal to adult serum. The importance of this can hardly be over-estimated in view of the difficulty in maintaining an adequate supply of the latter reagents. Obviously the routine commercial distribution of placental extract through the ordinary channels would present no difficulty.

I am, Sir, yours faithfully,

ALEX. JOE.

North Western Hospital, Hampstead, N.W., April 20th.

HYPERVITAMINOSIS D

To the Editor of THE LANCET

SIR,—Dr. Thatcher's paper and Prof. Tanner Hewlett's letter, in your issues of Jan. 4th and 11th, leave unanswered the question: "What determines the toxicity of cod-liver oil? Does this depend on its vitamin-D content?"

The available evidence, both experimental and clinical, is conflicting. Thus A. F. Hess and Lewis [1] in 1928 found that patients receiving 2·5 mg. of irradiated ergosterol daily lost weight, developed slight fever, and had hypercalcæmia, hyperphosphatæmia, and albuminuria. Bamberger and Spranger [2] in the same year observed vomiting, loss of weight, and albuminuria in 10 of 11 tuberculous children receiving varying doses of irradiated ergosterol up to 30 mg. daily (from 0·4–2·5 mg. per kg. of body-weight). Gyorgy [2] (1929) reports the same effects also, in children with tuberculosis, from daily doses of from 3–10 mg. Two deaths clearly attributable to irradiated ergosterol have been reported [2]: in Putscher's (1929) case an infant given six drops of Vigantol daily died at the age of five months; while Thatcher's (1931) patient was a boy aged eighteen months, for whom a quantity of irradiated ergosterol "equal to about twice the recommended curative dose" had been prescribed. Gough [2] (1933) produced lesions in the kidneys of rats by moderate doses of vitamin D combined with large doses of acid and alkaline orthophosphates. On the other hand, J. H. Hess [3] gave infants up to 52 times the prophylactic antirachitic dose for long periods and 250 times that dose for short periods without producing hypercalcæmia or any of the clinical signs of overdosage reported by other writers. Furthermore, I have notes of a case of a three-year-old male child who has been taking vigantol, five drops three times daily, and continuously, since he was two years old for treatment for one of the radiological heresies "hilum tuberculosis." His health, weight, appetite, and urine have all been normal throughout.

Healthy adults taking large quantities of cod-liver oil occasionally develop tachycardia and precordial discomfort, even when there is no question of gastric disturbance to account for this (E. Mellanby, 1924).[4] Agduhr [4] (1926–29) found that cod-liver

[1] Hess, A. F., and Lewis, J. M.: Jour. Amer. Med. Assoc., 928, xci., 783.
[2] Quoted by Hadfield and Garrod: Recent Advances in Pathology, London, 2nd ed., p. 145.
[3] Hess, J. H., et al.: Jour. Amer. Med. Assoc., 1930, xcv., 316.
[4] Vitamins: A Survey of Present Knowledge. Med. Research Council, Spec. Rep. Ser. No. 167, London, 1932.

oil, given continuously to animals, may produce toxic effects on the heart and the development of pigment and/or fatty degeneration of the heart-muscle, transformation of the muscle-cells into connective tissue, and calcareous incrustations. Norris and Church [4] (1930) have shown that small doses of isoamylamine, as found in cod-liver oil, and also choline, given continuously, may produce paralysis, convulsions, and lack of growth; they suggest that these bases may be the toxic agents in cod-liver oil. As evidence that cod-liver oil in large doses is not necessarily harmful I may mention that a man I know, a police officer 25 years old, who is exposed to the sun of the tropics most of the day, has been in the habit, since 1930, of taking two coffee-cups full of pure cod-liver oil three times daily, because he is thinly built. He has so far remained in perfect health and shows no sign of any toxic effect. It is a pity that, in spite of recent studies, we are still unable to establish for certain the factor or factors which prevent cod-liver oil from being, in Prof. Hewlett's words, "the entirely innocuous substance it is generally supposed to be."

I am, Sir, yours faithfully,

HOSNY AYAD,
P.M.O. Government Hospital, Shanshour, Egypt.
March 26th.

"HYPERGLYCÆMIC COMA"

To the Editor of THE LANCET

SIR,—Perusal of p. 894 of your last issue has stimulated me at length to give voice to a protest against the term "hyperglycæmic coma." This term is inaccurate, coma not being produced by hyperglycæmia. The term is educationally misleading. As an examiner in medicine and in therapeutics, and to nurses, I have been struck by the large number of candidates who have been misled. The individual who first introduced the phrase has well merited a long term of penal servitude for the intellectual crime he has committed. Teachers who persist in using it, and writers who perpetrate it, are accessories after the fact. Why not talk of diabetic coma in contra-distinction to hypoglycæmic or insulin coma?—I am, Sir, yours faithfully,

London, W., April 20th. GEOFFREY BOURNE.

MENTAL HYGIENE IN MENTAL HOSPITALS

To the Editor of THE LANCET

SIR,—Might I suggest, since apparently the pages of THE LANCET are now thrown open to such major issues, that as a further elementary axiom "Four Asylum Psychiatrists" should be compelled to learn that the word "asylum" in this country is by law non-existent, and that such an "hygienic" measure as they propose, and seem to need, can hardly prove effective during such a short compulsory evacuation.

I am, Sir, yours faithfully,

T. J. HENNELLY.
Cardiff City Mental Hospital, April 20th.

SEX AND CULTURE

To the Editor of THE LANCET

SIR,—My attention has been drawn to a leading article (in your issue of Feb. 22nd) on Sex and Culture by a pious adaptation in one of our American health periodicals. We puritans love to upholster our prejudices with scientific trimmings and the rather broad generalisations in your editorial give us ample opportunity. Let us suppose that Dr. Unwin has established a correlation between temple building and sexual restraint, and that his fellow anthropologists will agree to his thesis. Let us assume that temple building is evidence of cultural progress amongst uncivilised people, though why it should be so regarded it is hard for a layman to imagine and your article does not explain. But suppose it is! Surely nobody wants us to believe that temple building and post-funeral attentions to the dead are evidence of culture in a *civilised* community? That would make the Quakers the least cultured of Christian sects and far less cultured than the Hindus. And see in the Old Testament the story of the Jews. Compare their sexual restraint in the days when they worshipped the Arc and built the Temple with their sexual morality when they discovered that "God dwelleth not in temples made with hands." Perhaps Dr. Unwin who lives after all in a civilised community needs to revise his social philosophy all over again.—I am, Sir, yours faithfuliy,

Santa Fé, N.M., April 4th. J. ROSSLYN EARP.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdrs. M. Brown to *Frobisher*; and R. W. Nesbitt to *President* for course.

Surg. Lt-Comdr. F. B. Quinn to rank of Surg. Comdr.

Surg. Lt.-Comdr. T. W. Froggatt to *Pembroke* for R.N. Hospital, Chatham.

Surg. Lt.-Comdrs. (D.) C. J. Finnigan to *Pembroke* for R.M. Infirmary, Deal; R. M. Finlayson to *Rodney*; D. L. Simpson to *Boscawen* for R.N. Hospital, Portland; and H. J. Luck to *Pembroke* for R.N.B.

Surg. Lts. F. W. A. Fosbery to *Lupin*; M. A. Rugg-Gunn to *Repulse*; and W. W. Simkins to *Ganges*.

Surg. Lt. (D.) K. E. J. Fletcher to *Pembroke* for R.N. Infirmary, Deal.

Surg. Lts.—The following have been transferred to the permanent list: W. W. Simkins, W. J. F. Guild, F. W. Chippindale, M. G. Ross, W. A. Ryan, D. D. Steele-Perkins, G. H. C. Southwell-Sander, G. A. Lawson, and C. P. Collins.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt.-Comdr. A. R. Thomas to *Rodney* and to *Encounter*.

Surg. Lt. G. F. Jones to *Drake* for R.N.B.

Surg. Sub-Lt. R. T. Gaunt promoted to Surg. Lt.

Proby. Surg. Lt. R. R. Prewer to *Victory* for R.N. Hospital, Haslar.

ARMY MEDICAL SERVICES

Col. N. Low, D.S.O., O.B.E., late R.A.M.C., having attained the age for retirement, is placed on ret. pay.

Lt.-Col. F. R. Coppinger, O.B.E., from R.A.M.C., to be Col.

ROYAL ARMY MEDICAL CORPS

Lt.-Col. R. Gale, D.S.O., is placed on the half-pay list on account of ill-health.

Majs. C. D. M. Buckley, M.C., and J. C. A. Dowse, M.C., to be Lt.-Cols.

Short Service Commissions: Lt. A. MacLennan to be Capt.

ARMY DENTAL CORPS

Capt. R. G. Law to be Maj. and retires receiving a gratuity. (Substituted for notification in the *Gazette* of Oct. 15th, 1935, *vide* THE LANCET, Oct. 26th, 1935.)

TERRITORIAL ARMY

Capt. F. A. Belam (late R.A.M.C., Spec. Res.) to be Capt.

Lt. H. Dickie to be Capt.

Lt.-Col. S. J. C. Holden, T.D., retires on account of ill-health and retains his rank, with permission to wear the prescribed uniform.

ROYAL AIR FORCE

Dental Branch.—L. C. Bellsham-Revell is granted a non-permanent commission as Flying Officer and is seconded for duty at Guy's Hospital, London.

INDIAN MEDICAL SERVICE

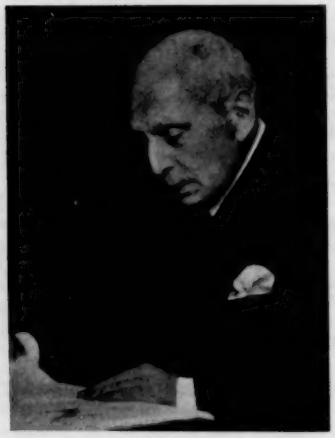
Capt. J. W. Richmond forfeits two years' service for purposes of promotion.

Lt.-Col. R. B. Lloyd retires.

OBITUARY

SAMUEL OSBORN, F.R.C.S. Eng., L.S.A.

Mr. Samuel Osborn, who died at his house at Datchet, Buckinghamshire, on April 16th, having attained the great age of 88 the previous day, was well known for his distinguished work in the Red Cross service and on behalf of the aims and efforts of the St. John Ambulance Brigade. He was born at Brixton, the son of Mr. Samuel Osborn, F.R.C.S., and was educated at Epsom and at Wren's famous coaching establishment. He received his medical training at St. Thomas's Hospital, where he qualified as M.R.C.S. in 1871 and held the resident appointments of house physician, house surgeon, and accoucheur. He became F.R.C.S. in 1876, and was for a time surgical registrar at St. Thomas's Hospital, and from 1878 onwards held the post of anæsthetist for five years, during which period he was a frequent contributor to the hospital reports, and wrote papers also in *The Lancet* and the *British Medical Journal* on diseases of the testis. He was elected surgeon to the Hospital for Women in Soho-square, and at one time had a bent towards gynæcological practice, as was manifested in a small book entitled "Sympathetic Affections of the Breast, Bladder and Rectum, with Uterus and Appendages," but he did not long pursue this line of practice.



MR. OSBORN

[*Photograph by Elliott & Fry*

Osborn's associations with the Order of St. John of Jerusalem began over 40 years ago, and his St. John Ambulance lectures on First Aid to the Injured and on Nursing were fully recognised for their practical value at the time of their issue. They were couched in simple and practical terms, ran through seven editions, and were translated into many languages—Chinese, French, German, Greek, Japanese, Spanish, and Hindustani—making of their author a truly international character in ambulance work. His practical contributions to that work were many and great, and made in situations which were often attended with notable hardship, calling for courage as well as intimate knowledge. In the Greco-Turkish war in 1897 he was surgeon to the Red Cross and was appointed to the Royal Order of the Redeemer of Greece. In the South African war he was surgeon to Lord Methuen's column in the South African Field Force and, acting also as Red Cross surgeon, he was attached to more than one field hospital, was mentioned in dispatches, and was decorated with a medal and clasps in connexion with the campaign. At the cessation of hostilities he was appointed a Knight of Grace of the Order of St. John of Jerusalem, and later became permanent secretary of the International Red Cross Congress. In the Balkan war of 1912 he was surgeon to the Turkish forces, and two years later at the outbreak of the European war he served as Red Cross surgeon in Belgium. On arrival at the seat of hostilities he found the Germans already in occupation, and his unit gave aid to both sides impartially. Later he was for two years resident surgeon to Lady Dundonald's Hospital in London. He was decorated by the King of the Belgians, and received also the Japanese Royal Red Cross decoration, having previously been an honorary member of the Japanese Red Cross Society.

The public value of Osborn's services was recognised by county and civic authorities, as well as by his own profession. He was a Lieutenant for the City of London and a J.P. for the county of Buckinghamshire. He was consulting surgeon to the Surgical Appliance Society and the Metropolitan Convalescent Institute, and was for many years surgeon to the Royal Naval Artillery Volunteers; for a period he sat upon the General Medical Council as a representative of the Society of Apothecaries, and he was Master of the Society in 1919–20. He was a traveller and a keen horticulturist. In all his public and professional work and as a frequent collaborator at THE LANCET Osborn showed himself a sympathetic colleague. He was able, kindly, and courteous, and many will feel his death as a personal loss.

MAURICE HAMBLIN SMITH, M.A. Camb., M.D. Durh.

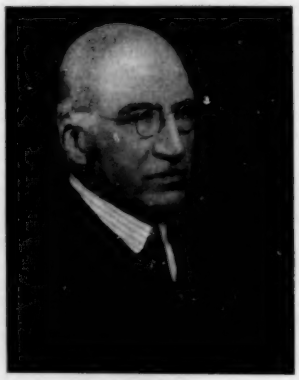
Dr. Hamblin Smith, who died in Oxford on April 15th, was a great public servant, although the extent of his greatness was realised only by those who worked closely with him. As the son of his father he naturally took a Cambridge degree in mathematics, afterwards entering as a medical student at Guy's Hospital, from which he qualified in 1896. Following some experience of private practice at Silverdale, Staffs, he joined the prison medical service. After serving as deputy in several prisons he was in medical charge in succession of Stafford, Portland, and finally Birmingham, where he remained until his retirement. At Birmingham he adhered closely to the one principle in penology which James Devon stated to be worthy of attention: "to find out why a man does wrong and make it not worth his while." His book on the "Psychology of the Criminal" (1922) showed a rare combination of long experience in prison work, knowledge of modern psychology, and courage in the expression of opinion. It was his experience in Birmingham that a court of law, when it trusts its examiner, is ready to accept his statement either that he has discovered a repressed complex which he believes to be the cause of delinquency, or that he is of opinion that further analysis would be of advantage in throwing more light upon the case or in benefiting the patient by freeing him from the impulse to commit similar offences. The human beings unfortunate or unhappy enough to become criminals owe a great debt to Dr. Hamblin Smith, for his life's work was the study of wrong-doers and the cause of their misdoing. He found in his investigations that some of the worst wrong-doing was due to inherent disabilities. During his long tenure of office he made such use of his opportunities for studying both mental defect and mental disorder that scarcely a case of either passed through the Birmingham courts without being recognised by him. He rendered equal service in his addresses on the

psychology of the criminal, given at Birmingham University and Bethlem Hospital, which he continued after his retirement from the prison medical service. He was an impressive, sometimes even poetical speaker, and a lucid writer. After his retirement three years ago to Oxford Dr. Hamblin Smith became honorary physician to the education clinic there, but his closing years were saddened by the death of his wife and his only son.

SIR HAMILTON BALLANCE, K.B.E., C.B., M.D. Lond., F.R.C.S. Eng.

WE regret to announce the death of Sir Hamilton Ballance, consulting surgeon to the Norfolk and Norwich Hospital, which occurred in Norwich on Monday last.

Hamilton Ashley Ballance was the son of the late Charles Ballance of Stanley House, Clapton, the brother of Sir Charles Ballance, whose death occurred in February last, and the youngest and only survivor of four brothers who entered the medical profession. He received his preliminary education at Mill Hill School and his medical education at University College Hospital, where he early distinguished himself by his success in examinations. He graduated as M.B., B.S. Lond. in 1892 with first-class honours in medicine and obstetric medicine and gained the gold medal in surgery. In the same year he took the diploma of F.R.C.S. Eng. later proceeding to the degrees of M.D. and M.S. Lond. He served the resident posts at his hospital, became senior obstetric assistant at the hospital, and assistant demonstrator of anatomy in University College. With a view to gaining all-round experience, he then held for a time the appointments of resident medical officer to the Victoria Hospital for Children and the General Lying-in Hospital, Lambeth, after which he entered general practice in Norwich. In 1898 he was elected assistant surgeon to the Norfolk and Norwich Hospital, but obtained leave of absence to serve as surgeon to the Imperial Yeomanry Hospital during the South African War. On his return he rapidly acquired a large surgical practice. At the outbreak of the European war, Ballance, who held already military rank in the Territorials, became at once attached to the 1st Eastern General Hospital at Cambridge, and in 1915 he went to France as a consulting surgeon with the British Expeditionary Force. His services in France were recognised by repeated mention in dispatches, he became Colonel A.M.S., and at the close of hostilities was made a C.B. and later a K.B.E. On taking up his career in Norwich he continued to carry on and develop a fine surgical connexion, but his work was brought to a sad close a year ago by incurable illness. To a surgeon of Ballance's experience and accomplishment the issue was clear; he retired from practice to face the inevitable with the greatest fortitude. He possessed in high degree the poise and sound judgment about men and affairs that was characteristic of his family. He took a leading but unobtrusive part in local medical politics, and for 14 years he represented the Eastern Counties on the Council of the Medical Defence Union. Always a man of few words, his words here became more infrequent as time went on, but whenever uttered they carried weight and were apt to determine the issue of a difficult problem.



SIR HAMILTON BALLANCE

[Photograph by Russell

A colleague at the Norfolk and Norwich Hospital sends the following tribute: "Ballance worked untiringly for the welfare of the hospital both as administrator and surgeon. In all directions he performed his duties pleasantly, courteously, and with dignity. He was a careful and skilful operator over a wide range of surgery, his work being based on an accurate knowledge of anatomy and pathology. He was a loyal and trusted colleague with whom it was a privilege and pleasure to work. His life and personality will be held in affectionate memory by a wide circle of friends and patients, and his colleagues at the Norfolk and Norwich Hospital will treasure his example. It is fitting that a surgical ward of the hospital should bear his name."

Sir Hamilton Ballance married the daughter of the late Rev. G. S. Barrett, D.D., of Norwich, by whom he had two sons and one daughter. He leaves behind him a fine record of accomplished work, and very many friends, private and professional, to regret the tragic abbreviation of his valuable career.

JOHN GORDON HARROWER, Ch.M. Glasg., D.Sc., F.R.C.S., F.R.S. Edin.

IT is with deep regret that we have received news of the sudden death, following a surgical operation, of Prof. J. G. Harrower, of Singapore, at the early age of 46 years. We owe to Sir Grafton Elliot-Smith the tribute which follows:—

"Prof. Harrower received his primary education at Shields-road School, Glasgow, and at 11 years of age was awarded two bursaries which enabled him to continue his education at Allan Glen's Higher Grade School, where he became an apprentice in an engineering shop. Then he joined the electrical power station of the Glasgow Corporation Tramways as a shift engineer. During his apprenticeship he attended the classes of the Royal Technical College, Glasgow, and incidentally acquired that mathematical skill which is revealed in his biometrical researches in craniology. He became so interested in electrical engineering, theory and practice, that he had the idea of devoting his medical career to practice in X ray work and radiology, but soon abandoned this intention.

"After a brilliant career as student and junior teacher in the University of Glasgow, which afforded him the opportunity of displaying his ability and versatility, he was appointed professor of anatomy in the King Edward VII. medical college at Singapore and went out to the Federated Malay States. There he was able to cultivate his interest in surgery, and eventually became consulting surgeon in the general hospital. The teacher of such intelligent students as the Chinese and Malays of Singapore soon realises that the essential discipline of instruction is to arouse the students' curiosity and encourage them to solve their problems by direct observation. Harrower realised that the best way to effect his purpose was to show them by his own example that research

was the only means to cultivate interest and efficiency, and he at once plunged into research in anatomy and anthropology. In touch with the Raffles Museum he developed interest in the tree-shrews and in the lemuroid nycticebus and, like his nearest neighbour in the world of anatomy, Prof. Le Gros Clark, he became intensely interested in what the latter has called the 'earliest forerunners of man' and also in the human bones which were dug up in the Federated Malay States. In the dissecting-room he investigated the anatomy of the Chinese coolies, and not only did the usual recording of anomalies but also made intensive studies of the crania of different groups of coolies, the results of which were published in the *Transactions* of the Royal Society of Edinburgh and in *Biometrika*. This work raised criticism among his colleagues, who expressed doubts whether it was proper for a teacher to spend his time in this way. Harrower, who regarded research as the one thing that made life worth living in his isolation, fought for his rights and won his footing. But his research accomplished more. It brought him into contact with other anatomists of similar interests—Prof. O. Hill, of Colombo, Prof. J. Shellshear, of Hong-Kong, and Prof. Davidson Black, of Peking, so that he no longer was oppressed by isolation.

"As an influential link in this chain of British anatomists in Eastern Asia, Harrower played an important part in maintaining British prestige in medical education, and his death is a serious loss to the Far East."

Prof. Blair, regius professor of anatomy in Glasgow, formerly a fellow student of Prof. Harrower, writes: "What Harrower said or implied with reference to his interest and ability in teaching is nothing short of the truth, for he left behind with his fellow students a reputation as a brilliant teacher, of strong and forceful personality, and a man respected and admired."

PROF. ROBERT BÁRÁNY

As we announced last week, Prof. Bárány, the otologist, died on April 8th at Upsala in Sweden, which had become his second home. It was in Vienna, where he was born, that he first attained his great reputation. A graduate of the university there, he went in 1901 to Frankfort and Freiburg, and then for a short time to Paris—"to learn more than the rest," as he said to his friends. On returning to Vienna in 1903 he found a place in the aural clinic of Adam Politzer, then the Mecca of the specialty. Very soon his attention was directed to the nervous system of the ear and its connexions with the eyes, and he endeavoured to discover a new anatomical and pathological basis for disorders affecting them, and hence for the treatment of these disorders.

As he said in the lecture delivered later in Stockholm when they gave him the Nobel prize, his attention had been caught by the rhythmic nystagmus caused by syringing the ears with water. He soon found out that this had something to do with the temperature of the water, and by patient observation he was able to analyse the factors governing labyrinthine irritation. This work produced order out of chaos and has furnished otologists with a reliable and valuable method of examination. Bárány's observations dovetailed into those of Ramón y Cajal and Bolk, and meant a big advance in the diagnosis of disease of the brain and the localisation of tumours, especially those of the cerebellum. His first reports were published in 1906, three years after he entered the Politzer Clinic, and though at first his ideas met with much scepticism—not to say ridicule—they soon won support abroad, and by 1910 were generally accepted. In 1908 he had been made Dozent (or teacher) in the University of Vienna, but his work was interrupted by the outbreak of war, on which he was called to the colours. He saw active service and was captured by the Russians; and it was during his imprisonment that he learned of his election as Nobel prizeman in medicine for 1914. He was the first Austrian to win a Nobel prize; and he was a Jew. The Russians were generous enough to release their celebrated prisoner, and in Sweden, on his way home, he was asked to take over the Upsala chair of otology. Not being altogether happy in Vienna he gladly accepted the offer, and in Sweden he made for himself a great name as an aural surgeon and an authority on head injuries. The surgical treatment of deafness, of sinus disorders, and of cerebral and cerebellar abscess were his favourite field of work, but professional interests did not prevent his attaining eminence also as philanthropist, pacifist, and humanist. It was on his initiative that in 1929 an International Academy of Politics and Social Science for the Promotion of World Peace was founded in Sweden: he was convinced that only "increase of knowledge, science, and insight would bring about final understanding among the nations," and he worked intensely at this problem. He was a prolific writer and for a time editor of several scientific journals.

Rather delicate in boyhood, Bárány was never very strong, and he never quite got over the effects of military service and captivity. After going to Upsala he became thoroughly Swedish, a faithful son of his new country; but he did not forget Vienna, to which his heart always drew him back. This week he would have reached the age of 60 and there was going to be a presentation to him from otologists throughout the world, who wished to express in this way their respect and admiration. But the occasion for rejoicing has been changed to one of mourning for an untimely death.

He leaves five sons.

ARTHUR BALDWIN DUEL, M.D. Harvard, F.A.C.S.

Dr. Arthur Duel, who has died in New York, will be remembered here for his association with the late Sir Charles Ballance in the surgical treatment of facial nerve injuries. Dr. Duel, on his own initiative, erected an experimental station in the grounds of his country home outside New York, and invited Ballance to carry on there his experimental work on nerve anastomosis and grafting. As the result of this coöperation Duel was able to elaborate and perfect his technique of nerve grafting for facial paralysis, and to use it in the treatment of over seventy cases. It is for others to assess the final results of this operation, but it can be said that it has already justified itself as a method of treatment, although it is one which demands a perfect technique and unremitting attention during the post-operative period. Filled with a boyish enthusiasm and a keenness for his work, Duel tested out his ideas and methods experimentally, making failures teach him and not allowing them to depress him.

"A few months ago," writes Dr. John Beattie, "Duel sketched out to me his plans for an attack on the problem of the 'tic' which he noted during the period of recovery in his human patients. His experiments were always simple, carefully planned,

and carried out with a surgical technique which was a joy to watch. Duel had a charming personality. Well-beloved by his contemporaries he occupied the highest offices in his own field of work, and enjoyed the friendship of those in the United States who were and are endeavouring to secure for medical research its proper place in medical education and post-graduate training. His lectures on his own specialty were simple and direct, neither claiming too much for his method nor decrying the efforts of others."

Those who listened to Dr. Duel's lectures at the Royal College of Surgeons of England in October, 1934, will remember the stress he laid on sound principles, good handicraft, and the use of the experimental method in the development of surgery. The profession in America has lost a leader and we in this country a friend and admirer.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Reassembly after Easter: The Budget

THE House of Commons reassembled on Tuesday, April 21st, after the Easter recess.

Mr. CHAMBERLAIN, Chancellor of the Exchequer, in his Budget statement said that his total revenue from all sources on the present basis was £776,606,000. The expenditure on the basis of the Estimates was £797,697,000, leaving a deficit of £21,291,000. Dealing with minor changes in taxation which he proposed, the right hon. gentleman referred to various methods of tax evasion which, he said, were being practised within the existing law. He said that an individual in this country could now avoid tax by transferring property to persons abroad though he himself retained control of the property and enjoyed the income arising therefrom. It was proposed that income arising from such property should be taken as the measure of taxable liability. Provisions of the existing law designed to avoid loss of surtax arising from manipulation of "one-man" companies at home had been proved to be defective. They would be strengthened to meet new devices to escape tax liability. These two proposals related mainly to surtax and necessary changes in the law would take effect as from 1935–36, surtax in respect of which was due in the current year. These changes were estimated to yield the revenue £2,000,000 in the current year and £4,000,000 in a full year. Another form of tax evasion, the Chancellor of the Exchequer said, was being carried on by means of so-called educational trusts. A parent signed a deed giving part of his income to his child and as guardian received that income from himself and used it for his child's maintenance and education. The parent did no more for his child than he would have done anyhow, but he obtained relief from income-tax on this income. This practice, said Mr. Chamberlain, was becoming widespread and was unfair. He proposed to amend the law so as to provide that the income-tax liability of parents would not be affected by these educational trusts. Legislation would take the form that any income of an infant and unmarried child which had been in any way derived from the parent should be aggregated with the income of the parent for all purposes of income-tax. Any income enjoyed by the child from other sources would not be affected. It was estimated that this proposal would yield a saving in a full year of £2,500,000. This saving would be applied to a continuing process of giving relief to those taxpayers who were so hard hit in 1931. Children's allowances would be increased from £50 to £60 (a higher level than ever before) for every child. The cost of this concession this year would be £1,000,000, and in a full year £2,000,000. The general allowance for married persons would be increased from £170 (to which £4 was raised last year) to £180. The cost (to be found from the general resources of the Exchequer) would be £1,000,000 this year and in a full year £2,000,000.

At present Estate Duty was not chargeable on personalty abroad which had been the subject of a gift or joint investment or foreign settlement. Advantage was being taken of this to place property outside the scope of the charge. It was proposed to place personalty abroad in the same position in this respect as personalty at home. A surtax of £1 a barrel was to be imposed on imported beer coming from non-Empire countries; there would be no alteration in respect of Empire beer. The Finance Bill would give effect to the recommendations in the recent report of the Committee on Key Industry Duties—i.e., the duties would be continued for a further 10 years, with some modifications and additions, and with provision in certain circumstances for variation of the duties from time to time. The net result of these minor changes was estimated to be an increase of revenue amounting to £1,025,000, thus reducing the deficit to £20,266,000. The Road Fund's surplus of £5,250,000 would be taken into the Exchequer. The standard rate of income-tax would be increased by 3*d.* in the £, giving an estimated yield in the current year of £12,000,000. The duty on both Empire and foreign tea would be increased by 2*d.* per lb. thus preserving the preferential margin of 2*d.* per lb. From this source it was estimated that the revenue would receive in the current year £3,500,000. The provision in the present Budget for defence was £50,000,000 more than that in the 1935 Budget. The final balance showed an estimated revenue of £798,381,000 and an estimated expenditure of £797,897,000, leaving an estimated surplus of £484,000.

Reviewing the national finances of the past four years Mr. Chamberlain pointed out that in 1932 old age and widows' pensions, health insurance, housing, and education required a little less than £121,500,000. In 1936 the estimated expenditure on these services was nearly £138,000,000. The aggregate present value of tax remissions made in Budgets from 1932–35 was over £50,000,000 a year.

HOUSE OF COMMONS

TUESDAY, APRIL 21ST

National Health Insurance

Miss RATHBONE asked the Minister of Health what had been the total amounts under health insurance of the contributions paid and benefits received by male and female contributors, respectively, during 1935 or for the last period of 12 months for which figures were available.—Sir KINGSLEY WOOD replied: The following is the answer. The total amount of contributions received in the year 1934, the latest period in respect of which complete information is available, was £18¼ million in respect of men and £8½ million in respect of women. In the same period payments on account of benefits, including medical benefit, which can be definitely classified on a sex basis amounted to £17,700,000 for men and £10,100,000 for women. In addition a sum of £2,580,000 was expended on additional benefits not in the form of cash, the division of which between men and women is not available.

ROYAL VICTORIA INFIRMARY, NEWCASTLE.—The board and governors of this hospital have decided to launch an appeal for £100,000 for extensions which include a pathological department and the opening of a new throat, ear, and eye clinic. The appeal for £150,000 made in 1927, to which Lord Runciman contributed £75,000, has only recently been realised.

MEDICAL NEWS

University of London

A recent examinations the following candidates were successful :—

D.P.H.

Part I.—Karl Biden-Steele, D. K. McI. Chalmers, Mabel J. Cooke, Florence A. Craig, Patience Craig, Janet M. Done, W. K. Dunscombe, Helen M. Evans, Jane O. French, Mary L. Gilchrist, G. E. Godber, Irene B. M. Green, Marjorie K. Hall, H. D. Holt, Joyce B. Jewson, Winifred A. Kane, Elsa V. McLaggan, J. A. R. Murphy, Eric Pereira, W. J. Pinto, G. D. Pirrie, Eleanor G. Porter, T. R. Rama Pai, M. J. A. Sandrasagra, L. D. Sarronwala, P. N. Sathe, B. K. Sikand, G. B. Smart, R. L. Tiruchelvam, and Evelyn A. M. White.

University of Glasgow

On April 18th the following degrees were conferred :—

M.D.—R. T. Fletcher, Matthew Jackson, and E. A. Underwood (with high commendation) ; *R. MacN. Buchanan (with commendation) ; A. T. Elder, John Hill, A. R. Miller, R. H. Moyes, *Helen I. Robertson, and Elizabeth N. Young.

M.B., Ch.B.—Isidore Zerlin (with honours) ; R. A. R. Taylor, Aloysius Dunn, John Devine, and Solomon Mair (with commendation) ; Ian Aitchison, J. G. Aitken, G. McG. Barr, J. B. Barr, G. F. Boyle, J. G. Brown, J. L. Burnet, J. G. Cairns, Kenneth Cameron, Barbara C. Carment, Leon Cohen, P. J. Connolly, Daniel Cryan, A. D. Cuthbert, Janet B. Dalgetty, Matthew Dantow, W. L. Girvan, C. W. H. Gourlay, W. J. Gray, J. H. Hamilton, R. M. Heggie, Robert Hillman, K. C. Hutchin, J. M. Livingston, J. P. S. McConnell, R. S. McDougall, R. M. Maxwell, J. W. Miller, W. S. Miller, A. S. Moodie, R. A. Murphy, W. Y. Smith, W. A. McE. Stewart, H. A. Sutherland, Alice M. Taylor, W. J. Walker, David Watson, D. B. Watson, Mary G. W. Watson, Samuel Weinbaum, W. E. Whyte, A. L. Wilson, John Wishart, and C. N. Young.

* In absentia.

Three Bellahouston gold medals were awarded to Dr. Thomas Nicol, Dr. J. B. Rennie, and Dr. W. R. Snodgrass, and the Macewen medal in surgery to Dr. R. G. Henderson.

Scottish Conjoint Board

As a result of recent examinations of the conjoint examining board of the Royal Colleges of Physicians and Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow, the following candidates have been granted the diplomas of L.R.C.P. Edin., L.R.C.S. Edin., L.R.F.P. & S. Glasg.

Clarence Abramson, Ernst Brauer, C. P. Bringle, Ganapathipillay Chelvadoray, D. G. W. Clyne, Y. M. Dadoo, W. J. Ess, F. H. Feldman, Samuel Fertig, Margaret A. H. Godfrey, Manuel Green, F. H. Haine, A. D. Hoffmann, Mildred P. Hudson, C. K. Joannidis, Ludwig Jost, Edith L. Kander, William Lees, J. D. Milne, B. K. Palit, Tiberius Reiter, J. C. Reveilland, S. J. Shapiro, Kenneth Shepherd, Hermann Simchowitz, D. D. Simmons, Irma Simon, O. F. Warner, Amin Wassef, C. M. Wells, and J. D. T. Wilson.

Royal College of Physicians of Edinburgh

On Friday, May 1st, at 5 P.M., the Dr. Alexander Black lecture will be delivered to the college by Dr. J. D. Gilruth, who will speak on the Legend of Chiron, the Father of European medicine.

Course on Applied Helminthology

Under the auspices of the University of London a course of lectures on applied helminthology with special reference to the control of agricultural and horticultural pests and the internal parasites of farm animals, poultry, and game-birds will be held at the London School of Hygiene, Keppel-street, W.C., from July 13th to 31st. Further information may be had from the secretary of the school.

Lectures on Individual Psychology

Under the auspices of the Medical Society of Individual Psychology Dr. Alfred Adler will give an address on Thursday, May 7th, at B.M.A. House, Tavistock-square, London, W.C., at 8 P.M. His subject will be the Psychological Approach, and tickets can be obtained free of charge on application to Margaret Watson Ltd., 15, Palace Chambers, Bridge-street, S.W.1. Dr. Adler will also deliver three public lectures in the Conway Hall, Red Lion-square, on May 11th, 12th, and 13th at 8 P.M. The subjects of these lectures will be the science of the individual personality, the science of social psychology, and the science of the prevention of neurosis and crime. The chairmen on these occasions will be Sir Walter Langdon-Brown, Dr. H. C. Squires, and Dr. W. Norwood East, and tickets are obtainable from Alfred Hays Ltd., 62, Strand, W.C.2.

University of Manchester

Applications are invited from medical graduates of this university for two Dickinson scholarships, one in medicine and one in surgery. Further particulars will be found in our advertisement columns.

Westminster Hospital Medical School

On May 11th and 12th an examination in chemistry and physics, with an English essay, will be held at this school for the allocation of four scholarships, of £75 each, to students preparing for a degree in medicine of an English university.

British Red Cross Society

A course of seven lectures on air-raid precautions will begin on Friday, May 1st, at 5 P.M., at the house of this society, 9, Chesham-street, London, S.W.

Orthopædic Scholarship

Applications for the Lord Nuffield scholarship in orthopædic surgery are invited before June 1st. The scholar will spend two years at the Wingfield-Morris Hospital, followed by three months' travel. Further information may be found in our advertisement columns.

Flint Cottage Hospital

The foundation-stone of the children's Jubilee ward at this hospital has been laid. Half the cost of the ward is being contributed by the employees of Messrs. Courtaulds silk factory in Flint.

Post-graduate Course at Freiburg

A medical post-graduate course is being held at Freiburg-in-Breisgau from June 28th to July 18th, at which members of the medical faculty will give lectures. Opportunity will be given for members of the course to take part in the work of the various clinics. Further information may be had from Dr. M. Bruecher, Schwimmbadstr. 8, Breisgau-i.-Br., Germany.

Society for the Provision of Birth Control Clinics

A lecture on the theory and practice of contraception will be given by Dr. Gladys Cox on Friday, May 8th, at 6 P.M., at the Walworth Women's Welfare Centre, 153A, East-street, London, S.E. Practical demonstrations will be given on Friday, May 15th, at 6 P.M. and at 7 P.M. by Dr. Cox, and on Friday, May 22nd, at 6 P.M. and at 7 P.M. by Dr. Lynette Hemmant. Medical practitioners and students should apply for tickets to the secretary of the clinic.

Fellowship of Medicine and Post-Graduate Medical Association

The following courses will be given shortly : psychological medicine at the Maudsley Hospital (afternoons, April 27th to May 30th), medicine, surgery, and gynæcology at the Royal Waterloo Hospital (all day, April 27th to May 9th) ; while arrangements for May include courses in dermatology at St. John's Hospital (afternoons, May 1st to 29th), thoracic surgery at the Brompton Hospital (all day, May 11th to 16th), urology at St. Peter's Hospital (all day, May 18th to 30th), proctology at the Gordon Hospital (all day, May 25th to 30th), venereal diseases at the London Lock Hospital (afternoons, May 25th to June 20th). Week-end courses will be held in May on infants' diseases at the Infants Hospital (May 2nd and 3rd), in chest diseases at the Brompton Hospital (May 9th and 10th), and in surgery at the Cancer Hospital (May 16th and 17th). Courses in June will include an evening M.R.C.P. clinical and pathological course at the National Temperance Hospital ; an evening M.R.C.P. clinical course in chest and heart diseases at the Victoria Park Hospital ; an afternoon neurology and psychotherapy course at the West End Hospital for Nervous Diseases, and week-end courses in medicine at the Prince of Wales's General Hospital ; in obstetrics at the City of London Maternity Hospital ; in fevers at the Park Hospital ; and in surgery at the Prince of Wales's General Hospital. Courses arranged by the fellowship are open only to members and further information may be had from the secretary of the Fellowship, 1, Wimpole-street, W.

An Expedition to Lapland

In our advertisement columns, Surgeon-Commander Murray Levick invites application for membership of an expedition to Northern Lapland next August and September. It is organised by the Public Schools Exploring Society; one or two honorary physicians or surgeons are required.

National Association for the Prevention of Tuberculosis

The council of this association has appointed Lt.-Col. Gordon G. Jolly to the post of secretary-general. Lt.-Col. Jolly is at present officiating public health commissioner with the Government of India.

Royal Institution of Great Britain

On May 1st Major W. S. Tucker, director of acoustical research at the Air Defence Experimental Establishment, will give the first of the Friday evening discourses since Easter. He will speak on direction finding by sound. On May 8th Sir William Bragg, P.R.S., will give his second lecture on the electric properties of crystals, and on May 15th Sir Richard Gregory, F.R.S., editor of *Nature*, will speak on Science in a Changing World. The discourses will be held at 9 P.M. at 21, Albemarle-street, London, W.

New Health Centre

Southwark borough council is erecting a health centre in Walworth-road at the cost of over £36,000.

New Dispensary at Lincoln

The Mayor of Lincoln has opened a new dispensary attached to Lincoln General Hospital. It has been erected on a slum-cleared site at a cost of £4000.

St. Leonard's Hospital, Sudbury

A new wing to this hospital is to be erected as a local monument to the late King. The hospital was built in 1868 and a sum of £5000 will have to be raised.

Plight of the Cornish Hospitals

It is stated that the West Cornwall Hospital at Penzance needs at least £20,000 for extensions, and the Royal Cornwall Infirmary at Truro £40,000, while the West Cornwall Miners and Women's Hospital at Redruth must have another 20 beds. All three hospitals are badly overcrowded.

Carmarthen County Infirmary

A new maternity wing and other extensions are to be added to this hospital at an estimated cost of £15,000, of which some £8560 has already been subscribed. The foundation-stone is to be laid on May 14th and when the extensions are completed there will be accommodation for 56 more beds.

Hampstead General Hospital

This institution is faced with a debt which has risen from £4250 at the end of 1934 to £8240 at the end of 1935. The rebuilding and enlargement of the X ray and massage department has been made possible through a donation of £8500 and it will be opened by Princess Helena Victoria on April 30th.

Kettering General Hospital

The daily average of occupied beds for 1935 at this hospital was 91·97, as against 76·25 in 1934. The average cost per patient, without making any allowance for the cost of out-patients, was £10 3*s*. 4½*d*. as compared with £9 10*s*. 7½*d*., and the average cost per occupied bed has increased by 8½*d*. The hospital guild weekly contributory scheme collected the record amount of £7393, which is an increase of £62.

Royal West Sussex Hospital

At the annual meeting of this institution it was stated that last year expenditure exceeded income by about £1800. Unless more money is received the hospital will have to draw upon its invested funds which amount to about £18,000. Expenses are increasing as the building is 111 years old and frequent repairs are necessary. The chairman said that if someone would give them £100,000 so that they "could knock the place down" and have a new building the cost of maintenance would be far less.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 11TH, 1936

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 1788; diphtheria, 959; enteric fever, 18; pneumonia (primary or influenzal), 757; puerperal fever, 33; puerperal pyrexia, 95; cerebro-spinal fever, 28; acute poliomyelitis, 2; encephalitis lethargica, 5; dysentery, 19; ophthalmia neonatorum, 79. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on April 17th was 6790, which included: Scarlet fever, 990; diphtheria, 1033; measles, 3428; whooping-cough, 625; puerperal fever, 14 mothers (plus 7 babies); encephalitis lethargica, 282; poliomyelitis, 5. At St. Margaret's Hospital there were 29 babies (plus 14 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 4 (1) from enteric fever, 103 (37) from measles, 2 (1) from scarlet fever, 36 (12) from whooping-cough, 28 (2) from diphtheria, 42 (14) from diarrhœa and enteritis under two years, and 57 (12) from influenza. The figures in parentheses are those for London itself.

There is a slight set-back in the mortality from measles, the figures for the last eight weeks (working backwards) being 103, 81, 104, 114, 105, 84, 88, 78 for the country as a whole, and 60, 43, 62, 62, 58, 47, 38, 18 for Greater London. Liverpool reported 9 deaths, Leeds 8, Barking, Leyton, Bristol, and Norwich each 3, no other great town more than 2. Gateshead had 4 fatal cases of whooping-cough, Liverpool 3. Deaths from diphtheria were reported from 14 great towns, 5 each from Liverpool and Sheffield, 4 from Hull.

The number of stillbirths notified during the week was 243 (corresponding to a rate of 40 per 1000 total births), including 39 in London.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, April 27th.

Odontology. 8 P.M. Mr. G. T. Hankey: Complete Caries of Erupted Permanent Dentition at the Age of 13—Agenesia of the Enamel. Dr. A. MacGregor: The Lymphatic System of the Teeth and Jaws.

TUESDAY.

Medicine. 4 P.M. Clinical Meeting at Charing Cross Hospital, W.C.

FRIDAY, May 1st.

Otology. Cases at 9.30 A.M. 10.30 A.M. Annual General Meeting. Dr. G. V. Th. Borries (Copenhagen): Diagnostic Problems in Otogenous Intracranial Complications. Mr. T. E. Cawthorne: Prescription of Aids to Hearing. Demonstration of Hearing Aids.

Laryngology. Cases at 4 P.M. 5 P.M. Annual Genera Meeting. Mr. W. S. Thacker-Neville: The Treatment of Quinsy by Tonsillectomy. Dr. G. V. Th. Borries (Copenhagen), Mr. F. J. Cleminson, and Dr. Gavin Young: Headache Associated with Disease in the Nose.

Anæsthetics. 8.30 P.M. Annual General Meeting. Dr. E. P. Poulton: The Future of the Oxygen Tent.

FRIDAY and SATURDAY.

Neurology.

May 1st. Meeting in Amsterdam. Morning: Demonstrations at the Neurological Centre and Presentation of Cases in the Wards by Prof. B. Brouwer. Afternoon: Meeting of the Amsterdamsche Neurologen Vereeniging.

May 2nd. Morning: Demonstration of Neuro-surgical Cases by Dr. Oljenick.

Odontology.

May 1st. Meeting in Birmingham. 7.15 P.M., Dinner at Union Club. Mr. C. M. Strong: Pathology and Treatment of Dental Infection of the Antrum.

May 2nd. 10 A.M. (Medical Institute). Mr. Harold Round and Dr. H. J. R. Kirkpatrick: Bacteriological Infections of the Mouth. 11.15 A.M., Mr. Hugh Donovan, Mr. Russell Green, Dr. Baylis Ash, Prof. Humphreys, Mr. Harold Round, Colonel Broderick, Mr. Sampson, and Mr. Strong will show Clinical Cases. Mr. John Bunyan: The Injection Technique for Taking Plaster Impression.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.
FRIDAY, May 1st.—8 P.M. (West London Hospital), Sir James Walton, Dr. Maurice Shaw, Prof. E. C. Dodds, and Dr. H. W. Post: Diseases of the Stomach.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

UNIVERSITY OF BIRMINGHAM.
TUESDAY, April 28th.—3.30 P.M. (Children's Hospital, Ladywood-road), Mr. R. A. Broderick: Dental Aspects and Treatment of Cases of Cleft Palate and Hare-lip in Children.
THURSDAY.—4 P.M., Prof. W. W. C. Topley, F.R.S.: The Mechanisms of Immunity: the Antigen-antibody Reactions. (First William Withering Lecture.)
FRIDAY, May 1st.—3.30 P.M. (Queen's Hospital), Mr. Bernard Ward: Treatment of Retention of Urine in General Practice.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane-road, W.
MONDAY, April 27th.—2.15 P.M., Dr. Duncan White: Radiological Demonstration. 3.30 P.M., Mr. Frank Cook: Dysmenorrhœa.
TUESDAY.—2 P.M., Prof. E. H. Kettle: Pathological demonstration. 3 P.M., Dr. A. A. Miles: Extensions of the Widal Test.
WEDNESDAY.—Noon, Clinical and pathological conference (medical). 2.30 P.M., Clinical and pathological conference (surgical).
THURSDAY.—2.30 P.M., Dr. W. S. C. Copeman: Arthritis. 3 P.M., Dr. Chassar Moir: Operative Obstetrics.
FRIDAY, May 1st.—2.15 P.M., Dr. A. A. Davis: Gynæcological Pathology. 5 P.M., Sir James Walton: The Surgical Aspects of Dyspepsia.
Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics or operations, obstetric and gynæcological clinics or operations.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.
MONDAY, April 27th, to SUNDAY, May 3rd.—MAUDSLEY HOSPITAL, Denmark Hill, S.E. Afternoon course in psychological medicine.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. All-day course in medicine, surgery, and gynæcology.—INFANTS HOSPITAL, Vincent-square, S.W. Sat. and Sun., course in infants' diseases.—Courses open only to members of the fellowship.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
WEDNESDAY, April 29th.—2 P.M., Dr. Wilfrid Sheldon: Œsophageal Obstruction. 3 P.M., Dr. G. H. Newns: Morbid Anatomy of the Intestinal Tract.
Out-patient Clinics daily at 10 A.M. and ward visits at 2 P.M.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Marylebone-road, W.
WEDNESDAY, April 28th.—5.30 P.M., Dr. John Parkinson: Aneurysm.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, April 28th.—4.15 P.M., Mr. Wilson H. Hey: Round About Peptic Ulcer.
FRIDAY, May 1st.—4.15 P.M., Dr. William Brockbank: Demonstration of Medical Cases.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.
WEDNESDAY, April 29th.—4.15 P.M. (Western Infirmary), Mr. J. Mill Renton: Toxic Goitre and its Treatment.

Vacancies

For further information refer to the advertisement columns

Acton Hospital, W.—Hon. Consulting Surgeon.
Altrincham General Hospital.—Jun. H.S. At rate of £120.
Aylesbury, Royal Buckinghamshire Hospital.—Second Res. M.O. At rate of £150.
Barnstaple, North Devon Infirmary.—Res. M.O. At rate of £150.
Birmingham and Midland Eye Hospital.—Res. Surg. O. £200.
Birmingham, Selly Oak Hospital.—Jun. M.O. At rate of £200.
Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.
Bradford Royal Infirmary.—Two H.S.'s. Each at rate of £135.
Bristol, Southmead Municipal General Hospital.—Jun. Asst. Res. M.O. At rate of £200.
Burton-on-Trent, General Infirmary.—H.P. and Cas. O. £150.
Canterbury, Kent and Canterbury Hospital.—H.S. At rate of £125.
Cardiff, King Edward VII. Welsh National Memorial Sanatorium.—Asst. Res. M.O. for Glan Ely Tuberculosis Hospital. £200. Also Res. M.O. for Kensington Hospital. £350.
Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Third Res. H.S. At rate of £75.
Charing Cross Hospital, W.C.—Hon. Clin. Asst.
Chester City Hospital.—Sen. Res. M.O. £400.
Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall, Gt. Barrow.—H.P. At rate of £150.
Coventry and Warwickshire Hospital.—Res. H.P. £160. Also Res. H.S. £125.
Doncaster, Royal Infirmary and Dispensary.—Res. Anæsthetist. Also H.S. Each at rate of £175.
Durham County Council.—District Tuber. M.O. £500.
Ealing, King Edward VII. Memorial Hospital.—Sen. Res. M.O. At rate of £250.
Eastbourne, Royal Eye Hospital, Pevensey-road.—H.S. £275.
Evelina Hospital for Sick Children, Southwark, S.E.—Part-time Pathologist. £250–£300.
Exeter, Devon Mental Hospital, Exminster.—Jun. Asst. M.O. £350.
Glamorgan County Council.—Med. Supt. for Penrhiwtyn Infirmary, Neath. £500.
Glasgow, Southern General Hospital.—Deputy Med. Supt. £500.
Grocers' Company, Grocers' Hall, E.C.—Three Medical Research Scholarships. Each £300.
Hastings, Royal East Sussex Hospital.—Locum H.S. £5 5s. per week.
Hertford County Hospital.—H.S. At rate of £180.
Heston and Isleworth Borough.—Asst. M.O.H. and Sch. M.O. £500.
Home Office, Whitehall, S.W.—Medical Inspector for Children's Branch. £738.
Hospital for Sick Children, Great Ormond-street, W.C.—Res. M.O. for Country Branch. At rate of £250. Also Surg. Reg. £200.
Hove General Hospital.—Hon. M.O. for Brighton Branch.
Hull, Beverley-road Institution.—Asst. M.O. £350.
Hull Royal Infirmary.—H.P. to Sutton Branch Hospital. At rate of £160. Also Second Cas. O. At rate of £150.
Infants Hospital, Vincent-square, Westminster.—H.P. At rate of £75.
Ipswich, East Suffolk and Ipswich Hospital.—Orthopædic Surgeon. £500. Cas. O. £168. Also H.S. £144.
Leeds, St. James's Hospital.—Res. M.O. Also Res. Surg. O. Each £350.
Leicester, City Isolation Hospital and Sanatorium, Groby-road.—Jun. Asst. M.O. At rate of £300.
Leicester Royal Infirmary.—Hon. Asst. Radiologist.
Leyton Borough.—Temp. Asst. M.O. 10 guineas per week.
Liverpool Sanatorium, Delamere Forest, Frodsham.—Second Asst. to Med. Supt. £200.
Llanelly Borough.—Asst. M.O.H. and School M.O. £500.
London County Council.—Sen. Asst. M.O.'s, Grade II. Each £500. Also Asst. M.O., Grade II. £250.
London Jewish Hospital, Stepney Green, E.—Res. M.O. and H.P. At rate of £150. Also H.S. and Cas. O. Each at rate of £100.
London Lock Hospital, 283, Harrow-road, W.—Res. M.O. to Male Depts. At rate of £175.
Macclesfield General Infirmary.—Second H.S. At rate of £150.
Manchester, Ancoats Hospital.—H.S. for Ear, Nose, and Throat Dept. At rate of £100.
Manchester, Baguley Sanatorium.—Jun. Asst. M.O. At rate of £250.
Manchester Royal Children's Hospital, Pendlebury.—Res. Surg. O. At rate of £125.
Manchester Royal Infirmary and University.—Dickinson Scholarships. £300 and £75.
Margate, Royal Sea-Bathing Hospital.—H.S. At rate of £200.
Mount Vernon Hospital, Northwood.—H.S. At rate of £150.
National Temperance Hospital, Hampstead-road, N.W.—H.P. At rate of £100.
Newcastle-upon-Tyne Education Committee.—Asst. School M.O. £500.
Northampton General Hospital.—H.S. At rate of £150.
Norwich, Norfolk and Norwich Hospital.—H.S. Also Cas. O. Each £120.
Nottingham City Mental Hospital.—Jun. Asst. M.O. £350.
Nottingham General Dispensary.—Res. Surgeon. £250.
Oxford, Wingfield-Morris Orthopædic Hospital, Headington.—Lord Nuffield Scholarship in Orthopædic Surgery. £200.
Penshurst, Cassel Hospital for Functional Nervous Disorders, Swaylands.—Locum tenens. 10 guineas per week.
Plymouth, Prince of Wales's Hospital, Greenbank-road.—Res. Anæsthetist and H.S. to Special Depts. Also H.S. Each at rate of £120.
Princess Beatrice Hospital, Earl's Court, S.W.—Res. M.O. At rate of £150.
Princess Elizabeth of York Hospital for Children, Shadwell, E.—Res. M.O. At rate of £200.
Princess Louise Kensington Hospital for Children, St. Quintin-avenue, W.—H.S. At rate of £100.
Queen's Hospital for Children, Hackney-road, E.—H.P. and Cas. O. Each at rate of £100. Also Clin. Asst. to Surgical Out-patients. 5s. per attendance.
Radcliffe-on-Trent, Notts. County Mental Hospital.—Second Asst. M.O. £459.
Redhill, Royal Earlswood Institution.—Jun. Asst. M.O. At rate of £250.
Rotherham Hospital.—H.P. £180.
Rotherham, Oakwood Hall Sanatorium.—Asst. M.O. £300.
Royal Naval Medical Service.—M.O.'s.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Res. Cas. O. £150. Also H.P. At rate of £100.
St. Albans, Hill End Hospital for Mental and Nervous Disorders.—H.P. At rate of £165.
St. Bartholomew's Hospital, E.C.—Surgeon.
St. Thomas's Hospital, S.E.—Visiting Anæsthetist.
Sheffield Children's Hospital.—H.S. At rate of £100.
Shoreham-by-Sea, Southlands Hospital.—Part-time Radiologist. At rate of £125.
Southampton County Borough.—Asst. M.O.H. £500.
Southampton, Royal South Hants and Southampton Hospital.—Sen. H.S. £200. H.P., H.S. Also Res. Anæsthetist and H.S. to Ear, Nose, and Throat Dep't. Each at rate of £150.
Stockport Infirmary.—H.S. and Cas. O. £150.
Stoke-on-Trent, North Staffordshire Royal Infirmary.—Second H.S. Also H.S. for Aural and Ophth. Dept. Each at rate of £150.
Surrey County Council.—Asst. M.O. £600. Also Jun. Asst. M.O. for County Sanatorium. At rate of £350.
Swansea County Borough.—Asst. M.O. £500.
Swansea General and Eye Hospital.—H.P. At rate of £150. Also Cas. O. At rate of £150–£175.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Jun. Res. H.S. At rate of £100.
Winchester, Royal Hampshire County Hospital.—H.S. At rate of £125.
Wolverhampton Royal Hospital.—H.P. At rate of £125.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Banbury (Oxford).

NOTES, COMMENTS, AND ABSTRACTS

FEAR IN CHILDHOOD

By Hilda Weber, M.D., B.Sc., D.P.M.

PHYSICIAN TO THE INSTITUTE OF MEDICAL PSYCHOLOGY AND TO THE BRITISH HOSPITAL FOR MENTAL DISORDERS AND NERVOUS DISEASES, LONDON

Fear is a danger signal evolved in the interests of race- and self-preservation. It has therefore ultimately a protective purpose. But, invaluable as a temporary measure, its continued existence is harmful. It is not merely that the condition of the body and mind to which it gives rise is injurious to the general welfare of the organism, but its very presence indicates that some exciting cause remains; fear and anxiety can in fact only be treated rationally when it is recognised that they are but symptoms.

For these reasons fear, with its derivative anxiety, lies at the basis of much ill-health. None the less, the value of fear as a danger signal remains; like pain it warns the individual of some threat to his welfare. Its presence in some cases, therefore, is normal, and the nature of its origin requires discrimination. It is the purpose of this paper to draw attention to this aspect of the question, for disregard of the protective function of fear is not only frequent but also has deleterious results. In the course of everyday life, for instance, the sensitive child is likely to find his doubts and fears met with lack of understanding, possibly with impatience, even reproof. Bewildered, with guilt added to an increased sense of fear, initiative and ability receive a severe check. At the same time the child may feel resentment, even hate, for those who have given in place of help an added load of difficulty. Some of the problems and delinquencies of childhood may well find their root in such a situation.

While ignorance explains much of this intolerance, it is more difficult to account for the small attention which medicine pays to the protective function of fear. Yet it is common knowledge that those species of animals which do not possess the capacity for fear have other means of defence at their disposal: the tortoise finds protection in the thickness of his shell, the skunk in the terrible odour with which he is able to repel his enemies. Similarly it is no chance happening that the existence of those animals who can experience fear depend at times upon defence or flight: for, in keeping with its position as an emergency reaction, fear prepares the organism to meet the need which such a situation requires. Well recognised as are these facts in the medical world, certain considerations suggest that medical practice and theory pay them insufficient attention. The following case-history may serve as a useful introduction to the subject.

A Case of Fear

To be afraid of one's own shadow is a phrase popularly used to indicate excessive timidity. It is, however, so seldom met with that, apart from the intrinsic interest of the case itself, its occurrence in actual practice seems worth recording.

Thelma, an intelligent child of 19 months, was walking along the street with her mother one winter's evening, when, observing her own shadow cast by the light from a standard lamp behind her, she became filled with terror. Clinging to her mother she met any attempt to make her stand on the ground with passionate and frightened crying. Her mother, seeing how great was her terror, carried her home, thinking the phase would pass. She was mistaken. Not only did the child on her return home show the same dread of shadows, but in the course of the next nine days matters went from bad to worse.

Thelma's whole outlook became increasingly dominated by fear. The previously happy and contented child, who had thoroughly enjoyed a romp, and yet would play for hours by herself when her mother was busy, now cried and demanded constant attention. She would not be left alone. Her parents, who had hitherto found her training an easy task, now found themselves in a quandary. They realised the danger which they ran of hopelessly spoiling the child; she was indeed beginning to dominate them with her screams and cries. But, they asked, what else could they do? If they left her to "cry it out" might not this make her ill? They received with relief the advice not to follow this course, which might well resolve itself into meeting fear with fear, and so could only increase the trouble. The aim of treatment was to make the more mature goal of adequate independence and coöperative action more acceptable than her present regressive mode of behaviour. When the subject of treatment was so explained the parents willingly coöperated in the ensuing interview, the main outlines of which follow.

The age of the child (19 months) precluding arguments by words, the possibility presented itself that the method used in overcoming fear in animals might have value. Two main methods are employed in training animals—namely, fear and kindness. Yet not only is fear a bad master, but to use it where fear is already in existence is but to increase the original trauma; at best it can but cover up, it cannot remove the trouble. Kindness, based on an attempt to comprehend the situation, achieves its purpose without these defects. When a horse shies at a piece of paper, for instance, if he is led up to the, to him, terrifying object, it is possible so to accustom him that he learns he has nothing to fear. The same method of procedure was now adopted with Thelma.

After she had become accustomed to the room, and a doll had effectively paved the way to friendly relations with me, I suggested that her father, who had the child in his arms, should carry her to the wall opposite the window. I then showed her the shadows of her own hands, those of her doll, and of a ball on the end of a string. Secure in her father's arms she took interest in the game and tolerated the shadows well. When on my suggestion, however, her father lowered her to within reach of the ground she screamed with fear: it was as though, since she had been walking when the fear of her own shadow first overwhelmed her, association with the floor reminded her again of her own fear. Possibly also, when on the ground, she became more acutely aware of her own defencelessness.

On the principle of not regarding her behaviour as mere naughtiness but rather as symptomatic of the difficulties which she was encountering, she was not forced in any way. Instead I advised her father to sit on a couch with Thelma in his arms. Again feeling secure, she soon became free enough to take interest once more in our game with the doll and the ball. After a time we made a further step. Her father holding her, she stood on the couch without fear. But when, on my suggestion, he sat on the floor, she again became fearful. At length, however, by similar stages as before, she passed from his knee to the ground, at the same time that she played with the toys and became further accustomed to their and her own shadows. Gradually, becoming more and more at home, the wish for exploration took the place of fear, and before the end of an hour Thelma's whole attitude and expression had completely changed. Whining, terror, and undue dependence had given place to freedom of action, to the contentment of the happy and self-confident child. She seemed as though she had been relieved of a load and was thankful to be freed from the unknown dread which had pursued her for days.

Subsequent as well as immediate progress was also good. The mother wrote some weeks later to say that Thelma had never gone back since the interview.

It is true that she had hesitated occasionally for a moment or so for two or three days afterwards, but she quickly recovered her self-possession and had no return of her fears. On the contrary she played with her own shadow and called it "Thelma." She began to make progress in every way. Her appetite and sleep were good, she put on weight, and became a normal and happy child. The good results so quickly obtained were undoubtedly satisfactory. At the same time it must be conceded that they in part depended upon Thelma's previous history, as well as upon the comparatively short duration of the symptoms themselves. Up to the time of the onset of her fear of shadows Thelma had been apparently well adapted in every way. The home atmosphere favoured this state of affairs. The parents were well adjusted and were fond of each other and of their child. Thelma, herself, was forward and intelligent—by the time she was 8 months old she was saying simple words such as "Mum" and "Dad."

The Place of Fear in the Development of the Child Mind

This picture of an intelligent, happy, and seemingly well-adjusted child, in a good environment both material and mental, renders the more surprising the pathological fear of shadows which arose for no obvious reason. Two broad possibilities as to the origin of this fear present themselves—namely, that it was a manifestation of a hitherto latent conflict, or that it was an atavistic fear of the unknown. Certain considerations support the latter and simpler possibility.

It was in the interests of self-preservation that primitive man should regard the unknown with diffidence, even with fear. But the very purpose of fear as a danger signal implies some discrimination, and discrimination is useless if there is not some corresponding power of independent action. The absolute helplessness of the new-born infant consequently renders it not surprising that at the outset of life fear plays little part. The infant's powers of exteriorisation generally are indeed very meagre: even the special senses are but imperfectly developed. It is significant, therefore, that his increasing powers of discernment, essential for the equipment of the relatively self-sufficient individual, have a corresponding correlation with a growing capacity for independent action.

These changes, however, require time. Even when the child can recognise his mother, for a while he is indifferent to most of his surroundings. For this reason his early easy acceptance of the attentions of strangers appears to depend rather upon the indifference born of lack of perception than actual friendliness. Similarly his later shyness may well indicate less an accession of hostility than the advent of a developing awareness of the need to distinguish the harmless and useful from the possibly harmful.

In connexion with the acute fear which the sight of her lengthening shadow aroused in Thelma, it is relevant that movement not only more readily attracts attention than does rest, but it also suggests a greater measure of life. To one who is beginning to be aware of the possible dangers of the unknown, the moving object is therefore especially apt to cause terror. This in turn accounts for the great fear which the sight of her lengthening shadow first aroused in Thelma. It is true that she must have seen shadows before. On the other hand her fear of them may well have arisen from her first observation of them (as opposed to mere seeing). For advanced enough to observe her lengthening shadow—she was rather a precocious child—she was not yet able to express in words what she dreaded. After all, absence of fear does not necessarily mean courage. It may depend upon lack of observation. Some of the timidity which intelligent children often display may arise from early perception of objects combined with incorrect interpretation. Certainly treatment which enabled Thelma to accept shadows as part of her normal environment resulted in the disappearance of her fears. Well-justified assurance took the place of the state of regression into which the condition of fear had cast her.

The dependence of children on their parents lends a further interest to the lasting good of this one interview. It suggests that they as well as Thelma had benefited. Certainly both had been present at the interview, and both had consciously recognised the goal of treatment—namely, the replacement of fear by well-justified confidence. These facts might well have influenced their later management of their child in the direction of better understanding; for any means which helps parents to a better understanding of the child has value. At this one interview comparison with animal life had suggested a method by means of which Thelma's fear of shadows was overcome. This fact suggests that the comparative approach may have a wider value in connexion with child life in general, and with their fears in particular. With this idea in view the following notes have been set down.

Points of Likeness Between the Child and Animal Mind

General management.—At the onset it is evident that the management both of children and animals has much in common. As a trainer once remarked, patience, firmness and understanding are always required in dealing with horses. Many an animal has been ruined by mistaking playfulness and high-spiritedness for viciousness: beaten for what was only a manifestation of health, the animal became vicious and sour. Surely such an opinion is well in keeping with much recent work with children, more especially when taken with his further remark that to lose one's temper is a sign of weakness which lowers the man in the animal's esteem. It may be that he was considering the horse from too anthropomorphic a point of view; the extent to which the behaviour of animals should be construed in human terms undoubtedly is a matter for very careful consideration. Nevertheless, with this reservation in mind, animals are in many ways so like children, and vice versa, that even cursory examination would suggest that the study of animal behaviour may have real value as an additional means of gaining insight into the workings of the child mind.

Difficulties of discrimination.—The difficulty which some animals find in distinguishing substance from shadow is a case in point. A dog I once knew could be worked up into a paroxysm of excitement whenever his master caused the light reflected from a glass to move about the floor; and it is not uncommon for a cat to play with shadows. But not only pleasurable excitement, fear may arise in animals in much the same way: the horse which shies at a piece of paper is an example. Experience suggests that incorrect interpretation may similarly be a primary cause of fear in children.

Sense of guilt.—None the less circumspection is always required when making deductions from material of this kind. There is not only the danger of anthropomorphising animal behaviour, but also the interpretation of child behaviour from too adult a standpoint, less often recognised, constitutes a real danger. An unconscious wish to justify his conclusions may well lead the adult to that overgeneralisation from the particular which inevitably produces error. For instance, it is true, as Klein points out in her work on "The Psycho-analysis of Children," that children suffer from an early age from a sense of guilt. But not only does she ascribe this guilt to conflict or conscience arising from difficulties usually if not always of a sexual nature, but she also appears to attribute all pathological anxiety to this origin, at any rate she does not refer to any other. Now whether or no she is right in her contention that all psychoneurotic reactions have their basis in the anxiety of children, anxiety in childhood is so common that knowledge of its causation in general and of this theory in particular deserves investigation.

The subject matter of this paper renders it of interest that the study of animal life offers a definite alternative: for with animals there is no constant relation between either conflict or conscience on the one hand, and anxiety on the other. A hen, for instance, exhibits unmistakable anxiety when she sees the ducklings she has hatched swimming on the water: their position is to her a dangerous one. But to credit her with conscience in the matter would certainly seem far-fetched. As Lloyd Morgan says, where the workings of lower mental processes can fairly explain an instance of animal behaviour, there is no justification for attributing it to those which stand higher in the order of development.

Evolution and the inherited response.—On the whole an animal's response, untutored by experience, gives insight into its primitive needs. None the less, as natural selection alone shows, this is not always the case. Pitt's observations on the effect of the temperamental characteristics which distinguish the mouse *Evotomys glareolous* from *E. skomerensis* are relevant here. The two species of mice are similar in physical structure. But the former's quickness, wariness, and readiness to take alarm have enabled him to flourish in surroundings in which his brother's slower movements and over-trustfulness have allowed him to become a prey to his enemies. The survival value of fear here comes plainly into view.

Environment and the inherited response.—At the same time an inherited reaction, though of advantage in the environment in which it was evolved, may be unsuitable in another. A lover of animals has ascribed the action of the horse which shies at a piece of paper to lack of courage, and contrasts it to that of the cat which tends to pause and examine the unfamiliar object. This opinion may be correct. On the other hand, in a given environment what is wisdom for one species of animal may be rash, even suicidal, for another. A herbivorous animal, such as the horse, in the wild state is well advised to regard the unexpected with caution, as a possible source of danger. But a carnivorous animal, such as the cat, whose livelihood in part depends upon his readiness to track down and spring upon the suddenly appearing quarry, is in a somewhat different position. Some degree of preparedness to examine, maybe to follow the suddenly appearing object, has for him a definite survival value. Hunger is a powerful master, and where it impels the animal the possibility of food may drive fear into the background.

Relation of Fear to Security

The needs of the moment, therefore, to some extent determine whether fear or interest predominate when the unknown is in question. The question of security to a large extent sums up the situation. It is ultimately in the service of self-preservation that the need for food is able to overcome fear. The question of security, that complement to fear, has in fact a special interest in connexion with the subject matter of this paper. Both endogenous and exogenous factors are concerned in this question. Well-justified assurance in one's own powers, whether physical or mental, contributes to the sense of security in a measure at least equal to that which external shelter or support may give. Examples of pathological fear and anxiety would even suggest that endogenous factors are if anything ultimately of the greater importance.

Security a counter to fear.—As a counter to the sense of fear the feeling of security need be but partial—but it must be sufficient to give the individual assurance from which he may grow. The small child, safe behind the shelter of his mother's skirts, dares then to peep out at the unknown and therefore to him terrifying stranger. The wise mother does not rebuff the child nor scold him for displaying fear. She may not recognise the emergence of an atavistic trait, a primal fear in the presence of the unknown, but she appears to realise the value of adequate though not pampering protection.

The sudden and unexpected.—Within certain limits anything which decreases the sense of security predisposes to fear. In this way a summation of factors may produce a state of terror. A loud noise is not necessarily in itself terrifying. Yet when it is unexpected it arouses fear even in the new-born infant. It is the same with the sudden loss of support, and as Watson points out, this to some extent remains throughout life. A man crossing a bridge, which remains quite steady until he reaches the middle when it begins to bend, shows real fear. On the other hand, both a loud noise and loss of support when associated with a well-balanced preparedness may arouse pleasure instead of fear (incidentally well-poised preparedness postulates a certain degree of security). The healthy child secure in his home usually loves a noise, and, as adults know to their cost, likes it all the more if he makes it himself. Not only is it expected, but possibly the knowledge that the noise is due to his own efforts gives him a sense of mastery, and that self-confidence which in itself lends a sense of security. It is the same with loss of support. The small child enjoys being tossed in the air by the strong and kindly adult—he knows that he will be safely caught. Possibly the sense of defying danger adds a spice to the situation. In phantasy it may be as though he were stepping forth into a dangerous country which his own prowess enables him to master. But some sense of security must be maintained—once the child has been dropped he will with difficulty, if ever, tolerate the game again.

Repetition in child play.—In other ways the need of security is of interest in connexion with children: for instance, the repetitive process which forms such a marked feature of their play. Repetition brings with it increasing familiarity, and familiarity, as contrasted with the unknown, brings with it a feeling of security. But just as a feeling of security follows upon past experiences to which the child has been able to adjust—e.g., by means of repetition—so, as Diethelm points out, the feeling of insecurity is based upon experience of the past to which the individual has not been able to adapt himself.

Emotion and intelligence.—For this reason intelligence plays a far more difficult part when an opposing "emotional set" has first been established. The well-trained polo pony is able to treat with unconcern the ball which by chance may pass between his legs on the polo ground. It is doubtful whether a pony not early trained could ever become so accustomed. Similarly with the child, early experience is of great importance: the youngest infant learns to inhibit painful reactions and repeats those which are pleasurable. But dependent though these responses directly are upon the emotions and automatic mechanisms, even at this early age intelligence plays some part. For instance, as Pritchard has pointed out, aments are with difficulty trained in good habits and broken of bad ones, whereas normal infants only acquire such bad habits if they are brought up wrongly.

Management of the Child

The above observation indicates that good management is in line with the normal child's best interests, and rather contra-indicates a too "go-as-you-please" attitude to his upbringing. Not only maldirection, no direction at all may have serious results. Experience is not necessarily the best teacher. The burnt child avoids the fire, but nobody would suggest that this is the wisest method of education. Apart from actual physical injury, the experience tends to make it more difficult for the child to avail himself of the useful properties of fire, whilst avoiding the dangers.

The child's need for guidance.—In short, nothing absolves the adult from responsibility towards the children in his care. Man owes his pre-eminence in the animal world to his intellect, and, as with other powerful weapons for good and evil, the child needs some initial help in the use of this potent and flexible instrument of adaptation. It is true that the child mind demands play for the development of

individuality and personal initiative; but he also needs some guidance and authority upon which he can rely. But though intelligence can achieve much, the emotional rapport between parent and child is of great importance; mishandling of the emotional life may wreck the whole. The behaviour of the parent therefore deserves careful consideration. Excessive severity tends to be equated with tyranny, undue leniency with weakness, whilst inconsistency of conduct the child finds especially hard to bear—it gives him no firm ground from which to grow.

The parent's attitude to the child's fears.—Good poise on the part of the parent is of inestimable value in connexion with childish fears. The realisation that these fears, far from being "mere cowardice" or "just stupidity," are rather symptomatic of something amiss, encourages a more constructive view of the situation. His resultant greater tolerance not only improves the relations between parent and child but also opens the way to a truer understanding. The child finds, in place of a seemingly tyrannical authority, a friend to whom he can turn in times of difficulty and stress.

Such a secure but not over-protected child is in a fortunate position. The need for the requisite degree of security satisfied, the wish to investigate the unknown takes the place of fear. Learning by experience that he is able to manage the problems which he encounters, difficulties come to be regarded as opportunities for action, not as responsibilities to be dreaded. Fears of the present, instead of forming an obstacle to progress, are converted into a scaffolding for further growth, a further impetus to right development.

Conclusion

Insufficient attention to the basic function of fear as an emergency reaction with a direct relation to race- and self-preservation is pernicious. It accounts for some of that misunderstanding and consequent mismanagement of the child's problems and fears, which not only gives rise to present trouble, but also leads to much unhappiness, even illness, in after-life. Means therefore which assist to a right estimate of a child's fears deserve attention. Comparative medicine as one such avenue of approach is dealt with in this paper. It not only offers an additional means of access to the understanding of the child mind, helping in the correction of certain misconceptions, but it also illustrates the sometime value of fear as a protective reaction.

Both clinical material and examples from animal psychology support the possibility that some of the fears of childhood represent the survival of an atavistic attitude to the unknown. A certain degree of security is necessary for normal development: fear calls attention to some disturbance of this balance. Its very insistency which emphasises the urgency for better adjustment has practical justification; for fears, which neglected or otherwise mishandled, may become a danger; but wisely dealt with as they arise in early life, become a stimulus for healthy mental development. A wise spirit of adventure takes the place of doubt and fear.

RURAL HOSPITALS IN THE UNITED STATES

AMONG many other beneficent activities the Commonwealth Fund furnished the means to build, between 1927 and 1930, six 50-bed hospitals in rural areas of the United States. These hospitals steadily grew in popularity up to the time of the trade depression when there was a set-back from which they have now recovered, and in the first nine months of last year they showed an average daily occupancy of 23·3, a figure almost equal to the highest peak recorded in the like period in 1931. (It might be observed in passing that the vision of a hospital never more than half full may excite envy among British practitioners accustomed to the cry of "no beds.") Last August a seventh hospital was opened at Kingsport and an eighth, at Tupelo, is already projected which, it is estimated, will serve a population of 100,000. For this hospital 2790 contributors have promised a local quota of $40,000. Five of these rural hospitals are already financially self-supporting. At first resident physicians were paid for by the Commonwealth Fund, but this is no longer necessary. The hospitals are staffed by local physicians and treatment tends to be concentrated in the hands of a few men tacitly adjudged by their colleagues to be the best in the vicinity. The hospitals are essentially general hospitals, and of every five cases admitted, two are medical or obstetrical and three surgical. At Kingsport an experimental prepayment scheme by potential patients is already in operation. Employed persons, enrolling by groups, pay one dollar down and nine dollars annually which entitles them to 21 days free hospital service and also to certain discounts. Another three dollars per annum entitles the member to further discounts in respect of services rendered to his dependents. The report includes a racy account of an average week's work in one of these hospitals.

"The day's first patient is Minnie Dale. She has an abscessed eye, and the best man in six counties for that is Dr. Coleman. Dale, a bright young farmer, knows the hospital and likes it; his brother has been in it three times in the last six months, and the doctors made just one little mistake: they said he wouldn't get well but he did. The clerk tells Mr. Dale that the charges will be $13; that is more than they counted on, but they have $10 and pay it. Mrs. Dale goes to the table and Dr. Coleman removes a diseased tear-sac and tear-duct; the threatened eye is safe."

Again, "Mrs. Midnight . . . was the clinic's first patient. When she learned that she was tuberculous the family had $200. She paid her doctor at $5 a treatment while the money lasted."

It is to be presumed that all the characters are fictitious, but we confess we should like to meet Mrs. Midnight.

R.A.M.C. TRAINING

AT a time when the policy of "si pacem vis, para bellum" has been adopted as a political necessity, the appearance of this manual [1] is appropriate. It is divided into two parts. Part A is concerned with military training and includes three chapters on the all-too-pressing subject of anti-gas measures. Chemical weapons are classified according to their effect or site of election into four groups: choking, nose, tear, and blister. The signs, symptoms, and treatment, both preventive and remedial, of poisoning by all these, and also by prussic acid and carbon monoxide which, though not strictly chemical weapons, might be encountered on active service, are clearly explained, and it is noted that the box respirator does not protect against carbon monoxide. Individual measures against chemical weapons comprise, in addition to the respirator, the wearing of protective clothing which may have to be decontaminated by various means such as exposure to the air, or to steam, baking, and boiling. Collective anti-gas measures aim at neutralising the poisonous substances, keeping trenches and dug-outs free from gas, or ridding them from contamination if it occurs. Personnel contaminated with gas but not actually casualties are dealt with by their units and not by the R.A.M.C. Those who have become casualties are treated first in gas-treatment centres and, if also wounded, are subsequently evacuated by the R.A.M.C. The organisation of a gas-treatment centre is described and illustrated by diagrams, and the syllabus for anti-gas training is tabulated at the end of the chapter.

Part B, for the technical training of warrant officers, non-commissioned officers, and privates, is divided into three sections. The first two—on anatomy, physiology, first aid, and nursing—go rather more deeply into these subjects than the ordinary

[1] Royal Army Medical Corps Training 1935. London: H.M. Stationery Office. 1935. Pp. 438. 3s. 6d.

manuals. The third section deals with food and cookery, and appended to it is a table of foods in season with times required for their cooking. The manual, profusely illustrated with figures and diagrams, is compact with information of medico-military importance.

A SURVEY OF ARTHRITIS IN FINLAND

IN 1934 plans were prepared for a sociological campaign against arthritis in Finland. The aid of the General Mannerheim's League for Child Welfare was invoked, and its visiting nurses, after hearing special lectures on the subject, undertook a house-to-house canvass of 37 rural communities with a population of 195,000 souls. As non-articular rheumatic affections, such as endocarditis, chorea minor, sciatica, and neuritis were not included, as a rule, in these nurses' inquiries, the information they collected concerned not so much rheumatic disease as a whole, as those arthritic manifestations which social workers can easily recognise. It was found that 1702, or 0·9 per cent., of the people visited suffered from acute or chronic arthritis or had a history of such disease, and from these figures the calculation is made that some 34,000 persons suffer from arthritis in Finland. Incidentally it may be noted that the number suffering from pulmonary tuberculosis in Finland at the present time is about 45,000.

The geographical distribution of arthritis proved to be most uneven, its incidence ranging from a minimum of 0·3 to a maximum of 4·3 per cent. in the different communities studied. The farther west and north a community, the lower the arthritis-rate. Not one typical case of gout was found. The ratio of chronic to acute cases was as 2·2 to 1 (1177 to 525). Women were more subject to the disease than men in the ratio of 2·4 to 1, and when the disease was chronic and the nervous system involved (chorea) this sex inequality was 11 to 1. Acute arthritis had developed in most cases before the age of thirty, and there were very few such cases beginning after forty. On the other hand, new cases of chronic arthritis continued to develop throughout life. In more than half of all the acute and chronic cases, there was evidence of a heredito-familial character; and in a series of 771 that were very carefully studied, it was found that the disease could often be traced through several generations. In 62 of these 771 (about 8 per cent.) both husband and wife were found to suffer from arthritis. As for the disability entailed by this disease, women were found to be oftener, earlier, and for longer periods disabled than men.

Dr. Holsti and Dr. Rantasalo, whose note on this study appears in *Acta Medica Scandinavica* for March 20th, come to the conclusion that the frequent occurrence of several cases of acute and chronic arthritis in the same family points definitely to the existence of some inherent factor common to the genesis of arthritis. The element of contagion cannot be dismissed in view of the comparatively high incidence of this disease in both husband and wife. But on the other hand "there can be no doubt that other, non-infectious factors, inherited or acquired, in the form of some heredito-familial disposition to joint disease also enter into the pathogenesis." There is also the climatic factor as well as the unhealthy influence of bad housing and soil conditions. It was, perhaps, more than a coincidence that the incidence of arthritis was highest in an area in which endemic goitre was very common.

The authors of this note conclude with a brief outline of the measures they consider would be most effective against arthritis. Treatment, they find, has less prospect of success than prevention; and with regard to the latter they recommend the improvement of housing and soil conditions, the combating of endemic goitre, the weaning of dentists from the habit of retaining devitalised teeth in the jaws of their patients, and the removal of the tonsils of those persons who suffer repeatedly from attacks of sore-throat. It is to be hoped that the example set in Finland of conducting an arthritis census will be followed in many other countries, for the information thus obtained is calculated to throw light on many aspects of this disease.

MILK IN A FEW WORDS

A MEMORANDUM entitled "The Nutritive Value of Milk," drawn up by the Ministry of Health's Advisory Committee on Nutrition, has just been published by H.M. Stationery Office (pp. 12, 3*d*.). It explains in simple terms the high value of milk as an article of food and mentions some of the investigations justifying the belief that the general health of the community, and especially of children, would be improved, and the incidence of disease diminished, if the present consumption of liquid milk, averaging about 0·4 pint per head per day, could be increased to about a pint. Children, it is stated, should receive 1–2 pints a day, and expectant and nursing mothers about 2 pints. Other adults, who need milk especially for the sake of its calcium and animal protein, should have at least half a pint daily. The memorandum speaks of the advantages of pasteurisation, and states that when milk is treated by heat there is little significant change in its nutritive properties, and such deficiencies as may be caused can readily be made good. It is therefore reasonable to assume that raw milk incorporated in other cooked articles of diet, such as bread and puddings, retains most of its nutritional properties. The report also calls attention to the degrees of nutritive value possessed by various milk products, especially separated milk.

THE MUNICIPAL YEAR BOOK

THE Minister of Health contributes a preface to the Year Book for 1936, and in commending it insists on the common enterprise in which the Ministry of Health and the local authorities are partners. One consideration especially he brings home to those who have the maintenance of our democratic institutions at heart and that is to encourage young people to study and appreciate their inheritance in the sphere of local government, so that the future will find people of integrity from all walks of life willing to shoulder its burdens and responsibilities. Of these burdens and responsibilities the Year Book gives accurate and comprehensive evidence. The volume this year contains two more sections than last although, fortunately, no more pages. Fully 80 per cent. of the volume, it is stated, has been rewritten. A list is given of conferences and meetings of associations in the coming year, and the whole book is worthy of the year which celebrates the centenary of the first Municipal Corporations Act in this country. The price of the Year Book is 30*s*. from the Municipal Journal Ltd., 3, Clements Inn, London, W.C.2.

NEW PREPARATIONS

STYPVEN.—The value of the venom of Russell's viper as a hæmostatic has been established by Macfarlane and Burgess Barnett (THE LANCET, 1934, ii., 985). Under the name of Stypven the Wellcome Physiological Research Laboratories present Russell viper venom in convenient form. It is issued by Burroughs Wellcome and Co. (Snow Hill Buildings, London, E.C.1) in rubber-stoppered bottles (1 c.cm. or 5 c.cm.) accompanied by sealed ampoules of a solvent consisting of distilled water containing 0·5 per cent. phenol. A solution of the necessary concentration is readily prepared and in cases of hæmophilia the power of the venom to control external hæmorrhage allows of the performance of minor operations in reasonable safety. Apart from hæmophiliacs there are many patients who suffer from prolonged bleeding after extraction of teeth, and this may be relieved by local application of a pledget soaked in Stypven. It is also believed that this hæmostatic may prove valuable in general surgery and its use—perhaps in conjunction with adrenaline—is suggested as a means of stopping the

bleeding or oozing often encountered in operations on the nose and mouth.

SKOL HEALING ANTISEPTIC is an astringent liquid devised for application to injured tissues, over which it forms a non-greasy protective film. The manufacturers (Skol Products Ltd., Westminster, S.W.1) lay stress on its unusual light-filtration properties; it cuts out "irritating and destructive ultra-violet rays up to 3700 Angstrom units." Good results are claimed in the treatment of burns, and except in severe second-degree burns its application is said to render dressings unnecessary. Its use is also advised in the treatment of bedsores, cuts, chilblains, stings, and various skin conditions, including some forms of eczema and varicose ulceration; it is further recommended, diluted with water, as a mouth-wash, gargle, and nasal antiseptic. The formula given is: extract of galls, 5·00; methyl-propyl phenol hexahydride, 0·25; phenyl hydrate, 0·50; glycerin, 3·00; ortho-oxy-benzoic acid, 1·00; alcohol and water, 90·25.

ENTORAL is a vaccine given by mouth as a protection against colds and other respiratory infections. The makers, Messrs. Eli Lilly and Company of Indianapolis (2, Dean-street, London, W.1), point out that although the common cold may be primarily caused by a filtrable virus its effects are largely due to associated organisms, including pneumococci, influenza bacilli and streptococci. They quote evidence that oral administration of vaccines will produce appropriate antibodies, and they attribute the peculiar success of Entoral Lilly to its preparation from strains with a high content of heterophile antigens. Such antigens evoke immune bodies which hæmolyse sheep corpuscles, and the observations of Rockwell, van Kirk, and Powell (Jour. of Immunol., 1935, xxviii., 475) suggest that after vaccination there is a definite correlation between the heterophile antibody content and the immunity established. These authors report that the use of an oral vaccine of pneumococci and streptococci was followed by a decrease of 57 per cent. in the annual incidence of colds among 500 treated persons; whereas 536 controls showed a decrease of only 12 per cent. for the same year. The best results were obtained in those most susceptible. Entoral Lilly is provided in capsules containing 25,000 million pneumococci, 5000 million *Hæmophilus influenzæ*, 15,000 million streptococci, and 5000 million *Micrococcus catarrhalis*. The dose recommended is one capsule daily for seven days, taken with cold water an hour before breakfast; two capsules are then taken weekly throughout the season. Usually there is nasal stuffiness or slight catarrh after the first dose or two, and very occasionally there is gastro-intestinal distress; but "reactions have not been particularly noticeable."

The British Drug Houses Ltd. have issued a short and informative account of the functions and clinical use of ovarian and gonadotropic hormones, with special reference to their own preparations GONAN, ŒSTROFORM, ŒSTROFORM B, and PROGESTIN B.D.H. It may be obtained from them at Graham-street, City-road, London, N.1.

We are informed that RECRESAL is now manufactured in this country and distributed by Messrs. Coates and Cooper Ltd., 94, Clerkenwell-road, E.C.1. It is a preparation of sodium dihydro-ortho-phosphate and its use is based on German work, dating from 1921, which led to the conclusion that muscular and mental output can be increased by regular administration of phosphoric acid in this form. Recresal is also said to be useful in shortening the course of infectious diseases, in overcoming debility and exhaustion (especially in children), and in promoting the healing of wounds.

CHICKEN-POX AND HERPES ZOSTER.—Dr. A. G. P. HARDWICK (Newquay, Cornwall) writes: "A case of academic interest has just occurred in my practice—that of a man, 76 years old, who contracted a severe attack of chicken-pox from a case of facial herpes zoster. On March 3rd I saw a man, aged 60, suffering from severe facial shingles. On March 5th, 6th, and 7th he was visited for two minutes each day by his next door neighbour. On March 20th I was called to see this neighbour, with a temperature of 103° F. and a profuse and typical rash of chicken-pox. There could have been no other chance of contracting the disease."

CORRIGENDA: LARGE DOSES OF ATROPINE.—An annotation in our last issue (p. 908) described experiments in Rumania in which atropine was given to patients in gradually increasing doses, to which they became tolerant. We stated that the doses mentioned were injected, but actually they were given *by mouth*.

The note about the work and needs of an ophthalmic hospital in our last issue (p. 910) referred to the Royal London Ophthalmic Hospital (Moorfields).

Appointments

FEGGETTER, G. Y., M.S. Durh., F.R.C.S. Eng., has been appointed First Assistant in the Department of Surgery at the British Postgraduate Medical School, London.

JONES, E. R., M.D. Liverp., D.P.H., Assistant Pathologist in the Kent County Council Laboratories.

MANSIE, J. W., M.R.C.S., L.D.S. R.C.S. Eng., Dental Surgeon to the Evelina Hospital for Sick Children, London.

Certifying Surgeons under the Factory and Workshop Acts: Dr. E. A. R. EVANS (Wrexham District, Denbigh); Dr. T. V. FITZPATRICK (Broughton District, Hants).

Institute of Medical Psychology.—The following appointments are announced:—

ALLEN, CLIFFORD, M.D., M.R.C.P. Lond., D.P.M., Psychotherapist;

DOHERTY, WINIFRED, M.B. Leeds, D.P.H., D.T.M., Psychotherapist;

HAMILTON-PEARSON, E. A., M.B. Aberd., Psychotherapist;

HUTCHISON, ALICE, M.D. Edin., M.R.C.P. Lond., Psychotherapist;

MILLS, HERMIA, M.B. Lond., Psychotherapist; and

THOMS, AMY, M.D. St. And., M.R.C.P. Lond., Psychotherapist.

Births, Marriages, and Deaths

BIRTHS

BAWTREE.—On April 14th, at Tunbridge Wells, the wife of D. W. Bawtree, F.R.C.S. Edin., of a son.

BONNER-MORGAN.—On April 17th, at Lancaster-road, Hampstead, the wife of Dr. W. R. Bonner-Morgan, of a son.

DINGWALL.—On April 13th, at a nursing-home, the wife of Surg. Lt. R. G. Dingwall, M.B. Aberd., R.N., of a son.

GARROD.—On April 14th, at Harpenden, the wife of Lawrence P. Garrod, M.D. Camb., of a son.

GREEN.—On April 16th, the wife of Dr. Leslie E. Green, Eastleigh, Hants, of a son.

LAWSON.—On April 15th, at Cambridge, the wife of W. A. D. Lawson, M.D. Leeds, Whittlesey, near Peterborough, of a daughter.

SAMMONS.—On April 11th, at Kingswood, Bristol, the wife of Dr. R. A. Sammons, of a son.

SHELDON.—On April 13th, at Sutherland-avenue, W., the wife of Dr. Colin Sheldon, of Reigate, Surrey, of a son.

TAYLOR.—On April 16th, at Purley, the wife of Dr. C. E. Taylor, of a son.

MARRIAGES

PARKES—JAMES.—On April 16th, at St. Thomas's Church, Douglas, I.O.M., Richard Quine Parkes, M.B., B.Chir. Camb., to Marjorie Whitehead, elder daughter of Mr. J. J. James of Douglas.

DEATHS

BROOK.—On April 14th, Francis William Brook, M.R.C.S. Eng., of Harley-street, aged 59.

HAMBLIN SMITH.—On April 15th, at Oxford, Maurice Hamblin Smith, M.D. Durh., late of H.M. Prison Service.

HUSBANDS.—On April 15th, Harold Wessen Husbands, M.R.C.S. Eng., of "Fairlight," Babbacombe, Torquay (formerly of Taunton).

LANE.—On April 15th, in London, Major George Lane (late R.A.M.C., S.R., and Colonial Medical Service), previously of Rowlands Castle, Hants, in his 68th year.

OSBORN.—On April 16th, at Datchet, Bucks, Samuel Osborn, F.R.C.S. Eng., J.P., Knight of Grace, Order of St. John of Jerusalem.

SHELDON.—On April 15th, at Chepstow Villas, W., Walter Sirr Sheldon, M.R.C.S. Eng., in his 60th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.